Bright ideas for keeping knowledge management from flickering out. Leadership Series follows page 32.

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
March 17, 1997 · Vol. 31 · No. 11 · 140 pages · $3/Copy $48/Year

Object stamp of approval

▸ *CORBA wins key endorsements, paving way to multiplatform compatibility*

By Sharon Gaudin

WHEN FOUR COMPUTER industry heavyweights joined forces last week to make their enterprise software and networking products more compatible, it came as welcome but long-overdue news to corporate information systems shops.

If the vendors deliver, IS managers won't have to worry as much about buying incompatible systems or spending as much money on training. They will also find they spend less time connecting vendors' products to one another.

The cooperative move by IBM, Sun Microsystems, Inc., Oracle Corp. and Netscape Communications Corp. centers on the Common Object Request Broker Architecture, an object-oriented middleware standard. CORBA is the plumbing that allows components, applications and databases to easily communicate with one another.

For users, the icing on the cake was when Microsoft Corp. recently announced it would link its Windows-only DCOM object architecture with CORBA

Object, page 117

Inside Wintel

▸ *Ambitions trigger concerns among partners, customers*

By April Jacobs, Mindy Blodgett and Laura DiDio

MICROSOFT CORP. and Intel Corp., the most powerful hardware and software vendors of the decade, may be cannibalizing their own customers to get ahead. Ambitious plans for market conquest threaten to dilute the focus of both vendors, undermining their ability to reliably serve customers.

NEWS ANALYSIS

The upshot for users could be even fewer choices, as the two companies extend their product strategies into new markets traditionally covered by their business partners.

Examples of these forays range from Microsoft's propensity for building everything in to its Windows operating system — leaving utilities and applications developers little breathing room in the process — to Intel's push beyond the chip market into everything from network cards to management tools.

Intel is shaping its future with chip technology that is increasingly powerful and intelligent. Shorter chip life cycles, coupled with its ever-tightening hold on chip sets and motherboards, are making it harder for other hardware vendors to leave their mark on PC technology.

For example, last week's un-

Wintel, page 16

The drive to do business **online** is changing the relationship between information systems managers and marketing groups at companies such as **Century 21 Real Estate, Lands' End and American President Lines.** It's often hard to tell the IS managers from the marketers without a business card. See story by Mitch Wagner, **page 28.**

Office to offer total server option

By Lisa Picarille

MICROSOFT CORP. officials said last week that the next major release of the firm's Office suite will offer a server-based option for users implementing a network computer strategy based on Microsoft's NetPC specification.

The additional option will enable users who run Windows NT Workstation 4.0 — from either desktops or NetPCs (see story, page 12) — to run Office entirely from the server.

Analysts said Microsoft is attempting to counter Lotus Development Corp. and Corel

Office, page 117

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Firms unite to cross-train, loan workers

By Julia King

RIG COMPANIES will no longer need to duke it out for top information systems professionals and other experienced workers.

And employees won't find themselves marooned in mid-career with obsolete skills.

Those are the key ideas behind an unprecedented, cross-industry consortium of 14 U.S. corporations that plans not only to cross-train workers, but also to loan one another key employees as needed.

"We need a new model to help us get to the future," said Jeannette Galvanek, a human resources vice president at AT&T Corp. and one of the key architects of the newly formed Talent Alliance. The alliance covers IS and other workers.

"The old model is based on people staying in one place for

Firms unite, page 117

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Insurers unite
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[illegible] AT DATA WAREHOUSE
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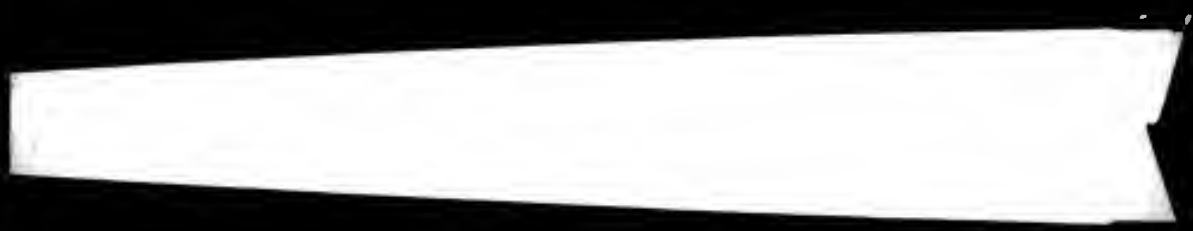

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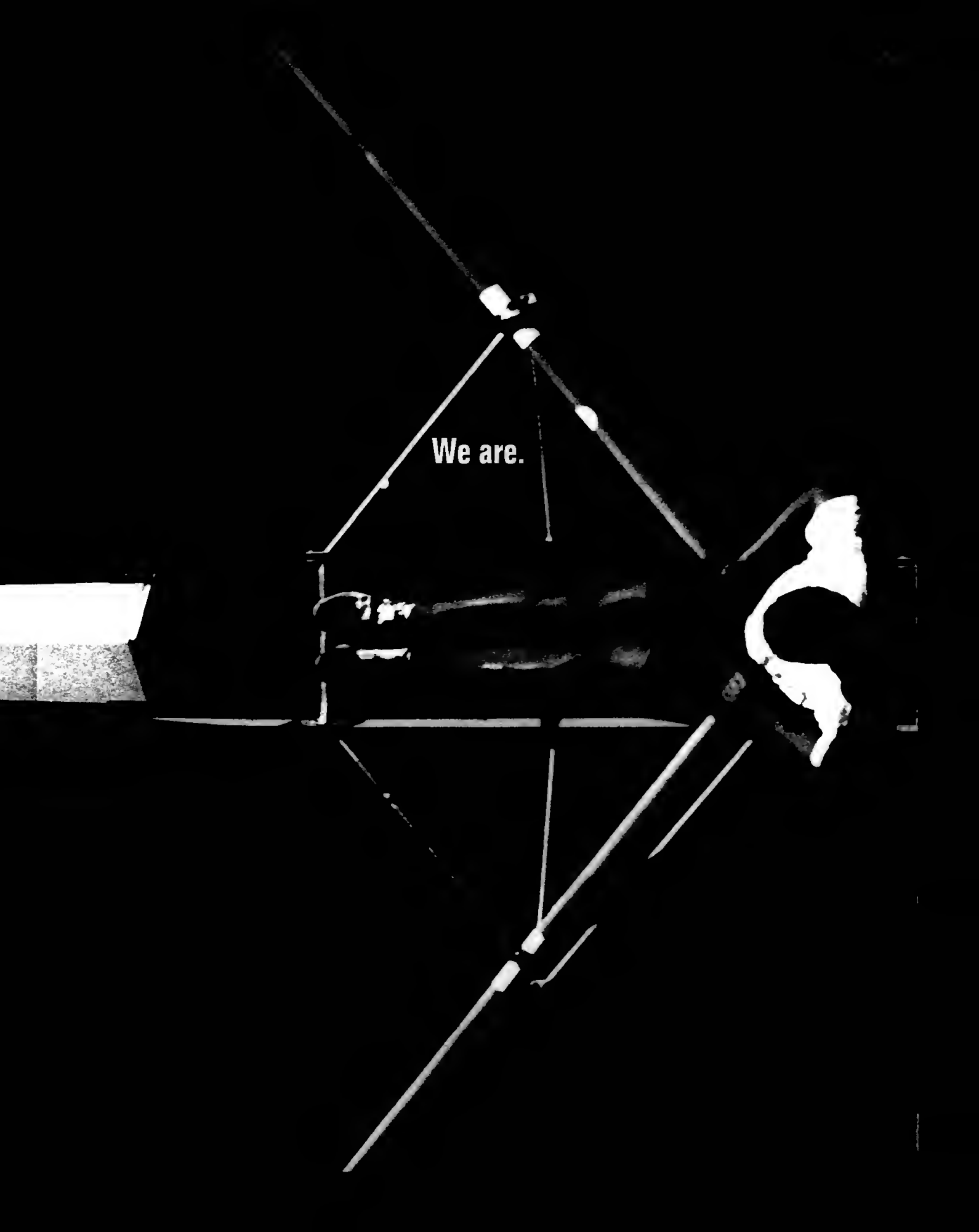

We are.

UP FRONT

CORBA clan

CORBA lives. Finally.

Last week's agreement by four industry heavyweights to support the CORBA standard may be the best chance yet for users to see the computer industry move forward in the battle over object components.

IBM, Sun, Netscape and Oracle agreed to support the CORBA middleware standard as a way for their products to communicate with one another. In theory, an update request issued to both an Oracle and a DB2 database should work, even if the databases run on different platforms on different machines across a network.

The idea sounds so customer-friendly that it's amazing it hasn't happened before. It has, actually. Many times. The computer industry is littered with alliances that were cobbled together in the name of expediency and then abandoned when they were no longer relevant. Remember Unix unity?

Fear is a powerful motivator, and the CORBA axis is afraid of Microsoft

What invariably happens to these initiatives is that self-interest and ego take over, and vendors begin adding extensions to the standards they adopt. Extensions have become, in the words of Gartner Group analyst Joyce Graff, "the new euphemism for proprietary." Vendors unwilling to kow to the CORBA standards have kept CORBA out of the mainstream for some time.

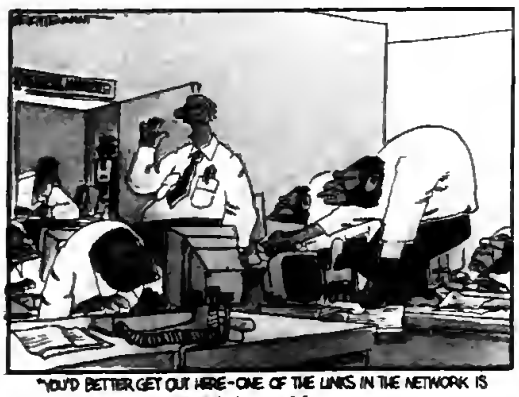
But fear is a powerful motivator, and the Sun/IBM/Netscape/Oracle axis is scared. Microsoft's Distributed Component Object Model (DCOM) architecture has clearly won the desktop, and recent Microsoft initiatives to move DCOM to bigger machines terrify vendors of large systems software. Unless they finally rally around CORBA, those vendors foresee a day when Microsoft objects determine how they interoperate. That prospect compels them to act.

What's different this time is that the vendors have pledged to certify all their products as CORBA-compatible and to begin delivering on those promises as early as next month. It's a promise users can help them fulfill by making CORBA compatibility a checkoff item on their purchasing wish lists.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE

BY RICH TENNANT



"YOU'D BETTER GET OUT HERE - ONE OF THE LINKS IN THE NETWORK IS STARTING TO ACT UP."

E-mail Rich Tennant at thewave@tiac.net

Sales packs refocus on buyers

▸ *But suites can be hard to maintain*

By Mindy Blodgett

TRADITIONAL sales force automation has focused on helping salespeople track contacts and update databases remotely. But the market is undergoing a radical overhaul that focuses the technology on the buyer, not the seller.

Vendors are coming out with software suites called interactive sales systems (ISS), which support customer-oriented tasks such as pricing, customizing products and placing orders.

Ken Dulaney, an analyst at Gartner Group, Inc. in Stamford, Conn., called ISS "the most exciting segment in sales force automation. It can truly improve profits and effectiveness."

ISS vendors said that by using the object-oriented technology, users can increase the average order value, slash cancellation rates and eliminate pricing and configuration errors.

By next year, 60% of the companies using sales force automation will use ISS, Gartner Group predicted.

ON A MISSION

Peter Perera, founder of the Perera Group consultancy in Andover, Mass., said the focus of ISS "is on the buying process. And I am on a mission ... to get people to see these sales systems as a tool to support the buying process, not the sales process, as traditional sales software does."

The key is being able to configure a product order, share up-to-date pricing and produce a proposal during one visit with a customer.

That process can take weeks or even months.

ISS software usually includes the following components: a marketing system, a configuration module, a proposal-generating module and a link to an order management system.

VENDOR ROW

Vendors offering ISS software include Trilogy Development Corp. in Austin, Texas, Concentra Corp. in Burlington, Mass., and Calico Technology, Inc. in San Jose, Calif.

Steve Torok, executive director of sales and marketing operations at Chrysler Corp. in Auburn Hills, Mich., uses the Trilogy ISS software, Selling Chain, as part of an interactive product information system the company is implementing.

Chrysler dealers will use the Trilogy software and a server to configure vehicle orders and pricing on the spot.

"The interactive systems have the ability to resolve issues quickly and to generate documents much faster than older sales software," Torok said.

SALES FORCE AUTOMATION

SPEED COUNTS

"A real issue today is how time-consuming it can be to buy a car. You can be at the dealership for up to four hours," Torok said. "With this software, that time is reduced."

But there are obstacles. For example, Perera said an ISS system can be unwieldy and difficult to maintain, especially when prices are continually changing.

Perera said smart companies will use ISS as just one part of an overall system that includes customer management and opportunity management software as well.

"But the problem is providing links between the different systems," Perera added.

"For instance, you are on the road, and you make customer contact, but you don't make a sale," Perera said. "That customer information needs to then go back to a database where that customer can be contacted again later." □

Building access in an hour

Caradon Screen Ltd., a supplier of custom-built replacement windows and doors in the U.K., had a problem.

The sales organization had 300 sales agents working as independent contractors. Working with a paper-based pricing system, sales representatives needed [illegible] to 45 minutes in the pricing. They often didn't even have up-to-date product information.

That resulted in sales error rates of 20% to 25% because of misconfigurations, said Robert Southward, Caradon's information technology manager in Herts, England.

By equipping the sales force with laptops that run an interactive selling system called Sellingpoint, the company increased the average sales value by 10.5%, slashed sales by 75% and eliminated all pricing and configuration errors, the project and Symquest executives said.

Sellingpoint is offered by Caradon Corp.

At the point of sale, a sales representative takes a digital picture of the buyer's home and immediately loads it on a laptop so customers can compare photos of their homes with stock photos of similar houses that have Caradon products.

"You're consulting with the customer, not just selling to them," Southward said. — *Mindy Blodgett*

with the customer, not just selling to them"

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"If you need to know what's going on in the industry but aren't near your PC, call the Computerworld phone line.

Help desk standards aid information sharing

By Kim Girard

INDUSTRY standards due this spring are expected to drive development of tools designed to allow users to track trouble tickets over the World Wide Web. Help desk users will also be able to exchange information among databases.

The help desk industry currently lacks a standard for exchanging information among help desks that use vendor-proprietary systems. Typically, each business that is contacted to help out with an end user's problem must create a service ticket that can't be shared among companies. Many times, even divisions within companies can't share tickets. Lack of information sharing leads to telephone tag and increases the time it takes to solve a problem.

STANDARDS UPDATE

REPEAT QUESTIONS

Between 60% and 70% of the service calls that vendors receive about their products are known problems that have been answered before, said Greg Oxton, executive director of the Customer Support Consortium (CSC) in Seattle, a group of 24 technology vendors. Better access to information among vendors and on the vendors' Web sites could stop some of the repetitive questions.

"This is one of those big, sticky, ugly problems we've had to live with within our industry," said Patrick Bultema, a consultant and chairman of the Support Management Working Committee of the Desktop Management Task Force (DMTF). The DMTF is working with the CSC to hammer out support service standards.

Bultema said it is unfortunate that help desks have no easy way to funnel into their intranets massive amounts of service information provided online from vendors. Easy access to that information would reduce calls to the vendor, he said. With new standards, vendors can make "translators" available on the Web by the fall to be used with a browser when downloading information to a help desk database, Bultema said.

"Something like this will be very helpful," said Randy Diederichs, a customer service manager at the North American regional support center of Cargill, Inc. in Minneapolis. "It's been such a hard-sell job to get everyone on one tool." □

IBM revving up Ramac

▸ *Turbo feature will boost disk array performance*

By Tim Ouellette

IBM NEXT MONTH plans to turbocharge the performance of its line of mainframe disk arrays to give users more than a good price when choosing storage options.

On April 8, IBM's Storage Systems Division in San Jose, Calif., will announce plans to speed up its Ramac Virtual Array (RVA) Model 2, *Computerworld* has learned. The new Turbo feature adds faster processors to the motherboard and improves mainframe Escon channel handling.

The RVA Model 2, formerly called Iceberg, was developed by Louisville, Colo.-based Storage Technology Corp. but is now resold and repackaged by IBM (CW, June 17, 1996).

Observers said IBM will be able to offer better performance to users who have seen performance jumps recently in products from IBM competitors EMC Corp. in Hopkinton, Mass., and Hitachi Data Systems Corp. (HDS). IBM's Ramac line has been seen mostly as a price competitor, while EMC's Symmetrix and HDS' 7700 series push the performance curve.

RVA was originally configured with some performance and capacity constraints that kept the price down, said John Webster, an analyst at The Yankee Group, a Boston-based research firm. "They are trying to eliminate these [constraints] by speeding up internal throughput so they can grow and max out the capacity without hurting performance," he said.

IBM officials confirmed the plans for the April announcement but didn't provide more details, such as pricing. Users, who have dubbed RVA2 "Ramberg" in honor of its Iceberg heritage, welcomed IBM's plans for a performance boost.

RAMAC ON THE ATTACK

Total: 3,007T bytes of mainframe storage shipped in 1997*

*Projected

Source: Gartner Group Inc., Stamford, Conn.

"We are always concerned about performance, especially since we see more work and more data being placed on the Enterprise Server [mainframe]," said Jack McRae, a systems programmer at the city of Los Angeles' Information Technology Agency, which runs three RVA systems.

One user who recently installed the current RVA2 system said it is faster than older IBM 3390s, even without the Turbo feature. "We've cut over an hour off our production schedule with the box," said Rod Feak, director of systems and networked services at Boston College in Chestnut Hill, Mass.

But, Feak said, the school doesn't max out data storage devices very often, so he didn't know if he would need the new features right away.

The RVA2 previously achieved performance gains through software tricks, such as built-in data compression and a virtual backup option called SnapShot, to limit the number of disk drives needed for storage and speed up backups. To broaden interest in RVA2, SnapShot is expected to add support for VSAM files, a common mainframe file type, by midyear. □

& **Data recentralization raises storage chargeback questions. Page 43.**

Homegrown intranets

Are they blossoming, or sprouting like weeds?

A department volunteers to create its own intranet application. It's gung-ho. It promises to do all the work. And your backlog is huge. Good deal, right?

Not so fast. First, you need support, content and security policies. Because when things go wrong, it's IS that gets mowed down.

In Depth, page 95

Hewlett-Packard lines up workgroup switching line

By Bob Wallace

HEWLETT-PACKARD CO., long known for its server and network-management prowess, is zeroing in on workgroup switching.

Analysts said the Palo Alto, Calif., vendor soon will announce an extensive switch family to compete with Cisco Systems, Inc., Bay Networks, Inc., 3Com Corp. and others.

"HP will have a major impact on the workgroup market, which is far from sewn up," said an analyst briefed by HP who requested anonymity. "The bigger boys better watch out; HP has come to play."

The HP products will include the following:

- The AdvanceStack Switch 224T, which provides 24 switched Ethernet links and two 10/100 ports. It has two expansion slots for network management, routing or remote access modules. It will cost $2,899.
- The AdvanceStack 2000, a six-slot chassis that can be equipped with four-port shared Ethernet, switched Ethernet, 100M bit/sec. Ethernet, Fiber Distributed Data Interface and Asynchronous Transfer Mode modules. It will cost $550 per port. The 224T and 2000 have 1G bit/sec. backplanes.
- The AdvanceStack Switch 800T, a system that can provide either 10M or 100M bit/sec. of bandwidth on all eight ports. It will cost $3,999. The 800T switch includes advanced routing functionality which makes it a "Layer 3" switch. It will route IP and Novell, Inc. IPX traffic. □

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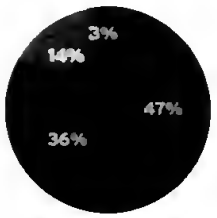

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ETC.

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Insurers pay premium for secure E-commerce

By Barb Cole

THE INSURANCE industry wants to embrace electronic commerce but is trying to avoid some of the risks of the Internet.

Six insurance giants have banded together to build a virtual private network (VPN) with secure Internet hooks that will let them exchange electronic mail, access a common directory service and, eventually, deploy electronic commerce applications.

They chose a VPN to ensure a level of security and a network quality of service that currently aren't possible on the Internet.

The group formed an independent London-based company, the World Insurance Network (WIN), to implement and manage the project. The group is expected to formally announce its plans next month and roll out its first subscription-based service this summer. The privately held entity isn't releasing financial details.

THE PAPER TRAIL

The companies involved believe that electronic commerce will help drive down costs in the paper-intensive insurance business and give them access to a wider range of information services.

Key players in other industries — most notably aerospace and petrochemical — have made similar moves with great success.

"We'll be seeing a lot more industries coming together to construct these types of [virtual private] networks," said Gary Rowe, a principal at Rapport Communications, Inc., a Washington-based consultancy.

He said the WIN service might appeal to insurance companies "that aren't comfortable with pumping their network traffic across a purely public network."

"In terms of doing electronic commerce, we feel that a private network is justified," said Dave Milliken, North American WIN coordinator at Sedgwick, the U.S. division of Sedgwick Group PLC, one of WIN's founders.

The group deemed the Internet weak in terms of being able to handle the multiple document types generated by insurance companies. "Back when this project was started, we were having difficulty just getting messages and attachments across the Internet," Milliken said.

Other WIN partners include New York-based giants Alexander & Alexander Services, Inc., Marsh & McLennan Cos. and the firm it announced plans to buy last week, Johnson & Higgins. London-based Willis Corroon Group PLC and Aon Group, Inc. in Chicago also are WIN partners.

PHASING IT IN

Phase I of the plan, dubbed WINconnect, will provide three services: an X.400-based messaging facility that supports Lotus Development Corp.'s CC:Mail and Notes and Microsoft Corp.'s Mail; a global directory based on the X.500 standard; and online services. WINconnect will handle message conversion and directory synchronization. It will be based on a TCP/IP frame-relay network managed by British Telecommunications PLC.

At the same time, users will be able to access public Internet servers from WINconnect and have browser access to the shared directory. The directory will include details on WIN members and information about companies that serve the insurance industry. A future goal is to sell subscriptions to the network to nonmembers.

Phase II, expected later this year, will support electronic data interchange between insurance brokers and carriers.

Corrections

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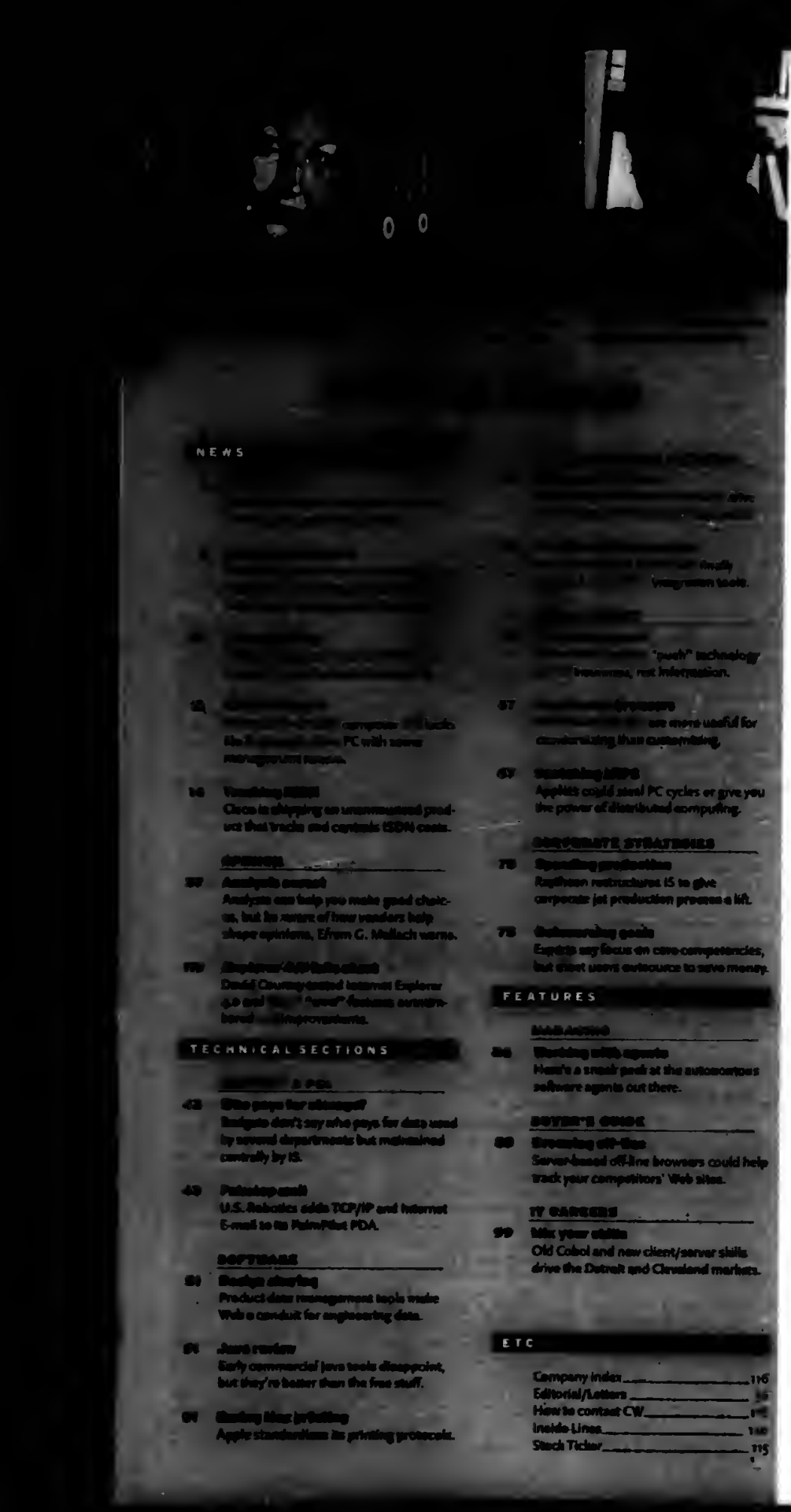

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Insurers pay premium for secure E-commerce

By Barb Cole

THE INSURANCE industry wants to embrace electronic commerce but is trying to avoid some of the risks of the Internet.

Six insurance giants have banded together to build a virtual private network (VPN) with secure Internet hooks that will let them exchange electronic mail, access a common directory service and, eventually, deploy electronic commerce applications.

They chose a VPN to ensure a level of security and a network quality of service that currently aren't possible on the Internet.

The group formed an independent London-based company, the World Insurance Network (WIN), to implement and manage the project. The group is expected to formally announce its plans next month and roll out its first subscription-based service this summer. The privately held entity isn't releasing financial details.

THE PAPER TRAIL

The companies involved believe that electronic commerce will help drive down costs in the paper-intensive insurance business and give them access to a wider range of information services.

Key players in other industries — most notably aerospace and petrochemical — have made similar moves with great success.

"We'll be seeing a lot more industries coming together to construct these types of [virtual private] networks," said Gary Rowe, a principal at Rapport Communications, Inc., a Washington-based consultancy.

He said the WIN service might appeal to insurance companies "that aren't comfortable with pumping their network traffic across a purely public network."

"In terms of doing electronic commerce, we feel that a private network is justified," said Dave Milliken, North American WIN coordinator at Sedgwick, the U.S. division of Sedgwick Group PLC, one of WIN's founders.

The group deemed the Internet weak in terms of being able to handle the multiple document types generated by insurance companies. "Back when this project was started, we were having difficulty just getting messages and attachments across the Internet," Milliken said.

Other WIN partners include New York-based giants Alexander & Alexander Services, Inc., Marsh & McLennan Cos. and the firm it announced plans to buy last week, Johnson & Higgins. London-based Willis Corroon Group PLC and Aon Group, Inc. in Chicago also are WIN partners.

PHASING IT IN

Phase I of the plan, dubbed WINconnect, will provide three services; an X.400-based messaging facility that supports Lotus Development Corp.'s CC:Mail and Notes and Microsoft Corp.'s Mail; a global directory based on the X.500 standard; and online services. WINconnect will handle message conversion and directory synchronization. It will be based on a TCP/IP frame-relay network managed by British Telecommunications PLC.

At the same time, users will be able to access public Internet servers from WINconnect and have browser access to the shared directory. The directory will include details on WIN members and information about companies that serve the insurance industry. A future goal is to sell subscriptions to the network to nonmembers.

Phase II, expected later this year, will support electronic data interchange between insurance brokers and carriers.

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IS charges warehouse rent

▸ *Departments face usage-based payments*

By Craig Stedman

YOU PLAY, YOU PAY.

That is the new data warehousing approach that a leading edge of information systems managers is moving toward.

They said the high cost of data warehouses and the need to accurately measure the business benefits they provide are pushing companies to start assessing usage-based chargebacks to departments. Until now, that usually hasn't been an option because of a lack of adequate tools and the start-up nature of most warehouses.

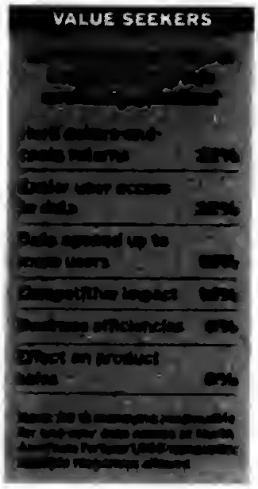
DATA WAREHOUSING

"The big issue is return on investment" (ROI), said Brenda Moncla, senior director of information management and support services at US West Communications, Inc. in Denver. "Warehousing technology is expensive, and it's very difficult to answer the question of what you get for it."

For example, much of a data warehouse's business impact might come from queries that use up a only small percentage of system resources, Moncla said. That could mean other queries cost more to run than they are worth. But there isn't a way to know that, unless you track warehouse usage and then parcel out costs accordingly, she added.

FAIR AND EQUITABLE

Usage-based chargebacks are also "the fairest way to allocate costs," Moncla said. US West Communications, the telephone arm of US West, Inc., plans by year's end to implement departmental chargebacks for its IT-byte corporate warehouse. Eventually, it hopes to assess costs based on individual queries.



Source: Forrester Research, Inc., Cambridge, Mass.

Data warehouses are typically now funded out of central IS budgets or one business unit. Some companies divide costs equally among departments that use the historical information for business analysis and decision support.

Only 16 of 50 warehousing sites recently surveyed by Forrester Research, Inc. in Cambridge, Mass., said they do dollar-based ROI measurements (see chart). A big part of the problem, users and analysts said, has been a lack of software for tracking usage and figuring out chargebacks.

Tools that prepare charges based on factors such as connection time, number of queries and amount of data accessed by users are now becoming available from several vendors. They include Pine Cone Systems, Inc. in Englewood, Colo., MicroStrategy, Inc. in Vienna, Va., and Sterling Software, Inc. in Dallas.

But Pine Cone is a small start-up, and the MicroStrategy and Sterling tools work only with each company's own query and analysis software. Some IS managers interested in chargebacks said they also face other hurdles, such as business-unit resistance and the complexity of figuring out how to charge for storage.

Jerry Tally, manager of infrastructure and data warehousing at Payless Cashways, Inc. in Kansas City, Mo., said he plans to build chargebacks into his 1998 budget proposal.

SETTING PRIORITIES

The building-materials retail chain wants to use its data warehouse to cut inventory costs by at least $50 million. Chargebacks "would provide a way of determining the true cost of doing that and would help set some of the priorities on what we do next," he said.

But convincing business units that their share of the costs is fair "is going to be a problem," Tally said. "I can show them the number of seconds of CPU time they use, but that doesn't mean anything to them business-wise." □

Data recentralization raises storage chargeback questions. Page 43

UNIFORUM '97

HP pushes NT/Unix integration

By Jaikumar Vijayan and Laura DiDio
SAN FRANCISCO

HEWLETT-PACKARD CO. hammered away at its Windows NT/Unix integration message at the UniForum '97 show here last week, unveiling new services and technologies to tie the rival operating systems together.

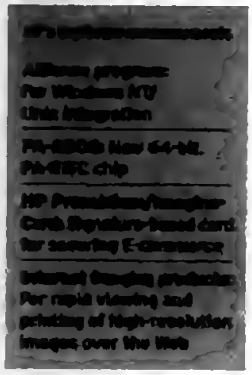
HP has allocated about 1,500 people worldwide to do consulting, support and management services for the Unix/NT integration push, which is initially targeted at Fortune 500 companies.

"HP views Microsoft as their way to take out IBM, and Microsoft looks at HP as their ticket to get Windows NT deployed in large enterprises," said Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif.

MORE TO COME

At a press conference to be held on Wednesday, Microsoft Corp. Chairman Bill Gates and HP CEO Lewis Platt will announce additional pieces of the alliance.

Those include more than a dozen technology, marketing and service and support agreements designed to meld HP's OpenView and high-end Unix systems with Microsoft's Windows NT Workstation and Server and desktop application suites.



HP also is developing new network and systems management tools, security, messaging and Internet/intranet middleware to integrate Unix with Windows NT.

The products, to be announced throughout the year, will advance HP's existing stable of integration tools, which already include Windows NT ports for HP's OpenView management suite, an authorization server controlling user access to mixed server environments and software that integrates HP Open Mail with Microsoft Exchange.

Other HP announcements last week included the following:

- A range of Internet products and services that cater to its "extended enterprise" strategy, which aims to integrate Internet technology with electronic commerce and electronic data interchange.
- The PA-8500 chip, HP's latest high-end PA-RISC microprocessor. It will be introduced on mainframe-class symmetrical multiprocessing servers in mid-1998.
- The bundling of Orem, Utah-based Novell, Inc.'s Novell Directory Services with HP-UX platforms.

"My sense is vendors are trying to position Unix as back-end servers and put the entire user interface and presentation layer on NT environments," said David Krauthamer, information systems manager at Parker Hannifin Corp. in Rohnert Park, Calif.

SECURITY CARD

HP also unveiled its new Praesidium/ImagineCard smartcard technology. Developed along with Informix Software, Inc. in Menlo Park, Calif., and Gemplus SA in France, the ImagineCard provides signature-based security across corporate networks. The technology lets corporations issue cards to employees or customers to control and manage access to enterprise networks and World Wide Web sites. □

Unix shows endangered

Analysts say the midrange Unix server market is thriving. And sales of high-end Unix servers rebounded last year.

But there was precious little evidence at last week's UniForum '97 show here.

Instead, the lowest-ever customer participation and muted vendor interest led to predictions of the demise of UniForum, one of the premier Unix trade shows.

Attendance dropped from about 14,000 last year to about 10,000 this year, organizers said. But observers expect the final tally to be much lower.

"This looks like the end of UniForum as we know it," said Thomas Kucharvy, president of Summit Strategies, Inc. in Boston.

"It probably is the last of the big Unix shows," said Mary Hubley, an analyst at DataPro Information Services, Inc. in Delran, N.J.

Growing corporate interest in technologies such as the World Wide Web, Java and Windows NT is diverting attention from Unix shows, observers said.

Despite recent attempts to be more broad-based, UniForum is still mostly considered a Unix show. Users looking for Internet, Java and Windows NT connectivity are likely to go to shows that specifically deal with those areas.

For example, more Unix vendors made announcements at Internet World in Los Angeles last week than at UniForum, observers said.

HP was the only major Unix vendor to make any significant product announcement at UniForum.

"I expected the show to be much bigger than this," said Theodore Veltfort, a consultant at Veltek, Inc., a Unix consultancy in Oakland, Calif. "The attendance this time seems very sparse."

— Jaikumar Vijayan

Oracle vs Informix

The key feature of a "universal" database is the ability to manage any type of data - tables, text, audio, video, etc. The key question is: if a large number of datatypes are not supported natively by the server, how easy and safe is it to extend that server with new datatypes?

	Oracle Universal Server	Informix Universal Server
Tables	Native Support	Native Support
Text	Native Support	Third Party DataBlade
Audio	Native Support	Third Party DataBlade
Video	Native Support	Third Party DataBlade
Spatial	Native Support	Third Party DataBlade

Oracle® Universal Server has powerful native support for most every datatype. In contrast, Informix requires you to program or buy third party developed datatypes that they call DataBlades. Amazingly, a mistake in the DataBlade code can shut down the entire server and may cause you to lose all your data, according to Michael Stonebraker, Chief Technology Officer at Informix®. What? Are you kidding?

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Lack of distributed object development delays extranets

By Justin Hibbard

NETSCAPE Communications Corp. last week sketched its plan for companies to turn their intranets into extranets by next year. But few companies are developing the distributed objects that supposedly will make extranets pay off.

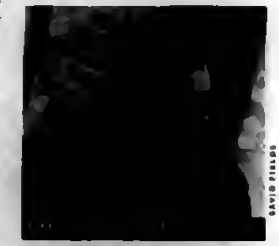
An extranet extends an intranet to trading partners, suppliers and customers via a secure Internet link. Netscape plans during the first quarter next year to release a line of products optimized for extranets.

Deployment of extranets appears to be growing, according to a recent survey of 125 corporate networking professionals by Business Research Group in Newton, Mass. The survey found that 32% of the respondents had implemented an Internet-based virtual private network, the connection over which extranets run. Seventeen percent plan to deploy one in the next two years.

IT'S STILL EARLY

But analysts and users said extranets still are limited to a niche of early adopters. They also said most extranets are far from supporting the networked applications that Netscape maintains all extranets will support by next year.

For example, Taco Bell Corp. in Irvine, Calif., recently began to share static Hypertext Markup Language (HTML) intranet pages with its franchises. Because browsers on all platforms support HTML, Taco Bell can deliver the pages without concern about whether outside users need a specific operating system to view them.



DAVID FIELDS

Company's extranet reduced the time it takes to deliver the results of property inspections to customers

But cross-platform compatibility will become thorny if Taco Bell decides to offer applications that perform transactions across the extranet. Then the company will have to choose a distributed object model, such as Sun Microsystems, Inc.'s Java or Microsoft Corp.'s ActiveX, and make sure the objects run on multiple platforms.

Snorrie Ogata, director of technical services at Taco Bell, said he is unsure which object model will become more ubiquitous and therefore safer to use as a development platform.

"When I actually get to the point when I have to write an application that is interactive and deals with database calls, maybe that will be worked out," Ogata said.

COMMON DILEMMA

Ogata's dilemma is common to many intranet developers considering extranets, said David Smith, an analyst at Gartner Group, Inc. in Stamford, Conn.

Developers face a tough decision when they must choose whether their applications will run only on their company's standard platforms or eventually be able to run on a variety of platforms when they are rolled out across an extranet.

"Most of them are saying, 'We want to keep our options open,'" Smith said.

Companies may put off moving intranet applications to an extranet in order to first determine whether extranets will provide a return on investment.

Many early adopters of extranets said they believe the systems will improve communications and customer service and reduce cycle times. But few said they expect extranets to impact their bottom line immediately.

Niraj Patel, chief technology officer at GMAC Commercial Mortgage Corp. in Horsham, Pa., said his company's extranet reduced the time it takes to deliver the results of property inspections to customers.

"It's a way to impress our external clients," Patel said. □

Netscape's new lineup

Netscape last week introduced the next versions of its client and server products and a visual development environment for building applications that the vendor said will run on multiple platforms.

The following are product code-names and features:

- **Mercury. The next version of Netscape's Communicator client suite will have an object store so users can download applications from a network, store them locally and use them off-line.**
- **Navigator, the browser component of the suite, will feature a new rendering engine, code-named Gemini, that will provide faster rendering of HTML, Java and JavaScript.**
- **Hypertree, a file management system, will let users organize electronic mail, local files and files on a network in a single window. A new component called Compass will let users organize files in a personal HTML page stored on a server.**
- **Apollo. The next version of Netscape's SuiteSpot suite of servers will come with an object store and services for supporting workflow and transaction processing applications built from distributed objects.**
- **Palomar. Netscape's visual development environment will let users build cross-platform applications from HTML, Java and JavaScript components. Palomar will use new component interface technologies such as JavaBeans, which will let developers access native component models such as OpenDoc and ActiveX.**

Palomar will be available this summer. Apollo, Mercury and a second version of Palomar will be available early next year.

— Justin Hibbard

SHORTS

Bill would block 'net taxes

A bill introduced last week in Congress calls for no new taxes on the Internet for two years. The Internet Tax Freedom Act, if passed, would stop states and municipalities from levying new taxes on the Internet or interactive services. Sen. Ron Wyden (D-Ore.) and Rep. Christopher Cox (R-Calif.) sponsored the bill to prevent taxes from stifling Internet commerce. But the bill wouldn't eliminate regular sales taxes from online shopping.

Microsoft posts Explorer patch

Microsoft Corp. last week posted to its World Wide Web site (www.microsoft.com/ie/security/update.htm) a patch that it said fixes three security holes discovered in its Internet Explorer browser.

Two of the security holes would let a programmer write code in a Web page that launches a damaging program on a PC when the page is downloaded by Internet Explorer. The third would let an intruder access a user's PC or a server by making a computer file appear as a Web page graphic. The problems affect Versions 2.0, 3.0 and 3.01 of Internet Explorer for Windows 95 and Windows NT.

Ryder in $1.4B outsourcing deal

Ryder System, Inc. outsourced its companywide information systems and telecommunications operations to IBM Global Services in Somers, N.Y., and Andersen Consulting in Chicago. The Miami-based transportation services firm expects to cut IS costs by $160 million during the 10-year, $1.4 billion outsourcing deal. IBM will run the bulk of Ryder's IS infrastructure, while Ryder will continue to handle application development. IBM plans to offer jobs to the "majority" of Ryder's 600-person IS staff, an IBM spokesman said.

Toshiba: Laptop power bug fixed

Toshiba America Information Systems, Inc. in Irvine, Calif., said it has fixed a problem with some of its laptops running the Windows 95 OEM Service Release 2.0 (OSR2). Microsoft's Web page reported that the power-management driver for the Windows 95 OSR2 may cause Toshiba laptops to power off under several conditions, including when the computer is placed in its docking station. The problem was reported on the Toshiba Tecra 710, 720, 730 and 500 series and the Toshiba Portege 650. Toshiba said it changed the drivers on the laptops to eliminate the bug.

Modem makers merge

Hayes Microcomputer Products, Inc. in Norcross, Ga., last week said it purchased privately held Cardinal Technologies, Inc. in Lancaster, Pa. The product-line consolidation will be interesting. Hayes currently supports the K56Flex modem technology from Lucent Technologies, Inc. and Rockwell International Corp.; Cardinal's modems feature competing X2 56K bit/sec. technology from U.S. Robotics Corp.

SHORT TAKES Ford Motor Co. in Dearborn, Mich., has named Bernard F. Mathaisel as its first chief information officer. Mathaisel is former CIO at Walt Disney Co. and was previously a partner at Ernst & Young.... Informix Software, Inc. amended the lawsuit it filed against 11 former engineers and Oracle Corp. in January, dropping charges that the employees stole trade secrets when they left for Oracle. Informix, in Menlo Park, Calif., said it is suing for threatened misappropriation of trade secrets.... Cisco Systems, Inc., Intel Corp. and Microsoft last week launched a program to speed up development of network multimedia applications. The Networked Multimedia Connection will focus on IP multicasting, Internet telephony interoperability and Resource Reservation Protocol.

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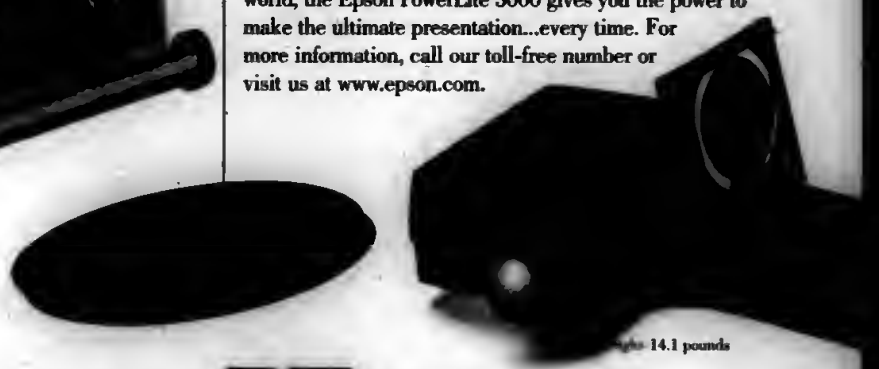

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High-profile Web sites rate more security

▸ *NCAA tourney site attack points to the problem*

By Sharon Machlis

JUST AS MEGAEVENTS such as the Olympics need extra security, high-visibility World Wide Web sites also require added precautions.

Vandals who broke in to the NCAA's Web site last week timed their attack to coincide with when site traffic was likely to be at a peak: the night "March Madness" basketball tournament pairings were announced.

The hackers posted racial slurs, swastikas and a white-power logo at the National Collegiate Athletic Association site. Last Sunday, the association's information technology staff had to pull the offensive material off the site three times before they successfully countered the break-in.

In the future, "there will be more real-time monitoring of the site," particularly around the times of major events, association spokesman Wally Renfro said.

The hack was the latest in a string of break-ins at high-profile sites, including the U.S. Air Force, the Department of Justice, the Central Intelligence Agency and NASA. "We've been a target for a while," but the incident on March 5 was the first successful penetration, NASA spokesman Brian Dunbar said.

Those break-ins are raising IT's security consciousness.

Edward Skoudis, a consultant at Bellcore in Red Bank, N.J., said he is receiving a lot of calls from corporate clients interested in beefing up Web security. He describes the situation as a four-level problem: the network a server sits on, the operating system it runs, the server software itself and the actual Web application. "If you don't look at all four of those levels, you're open to this kind of attack," Skoudis said.

High-visibility break-ins are raising IT's security consciousness.

William J. Orvis, a Computer Incident Advisory Capability team member at the University of California Lawrence Livermore National Laboratory in Livermore, recommended turning off all but essential functions on the server. "If it's a Unix box, get rid of Telnet, [file transfer protocol] — anything that lets users come in," he advised.

PoliticsNow, a site run by ABC News, *The Washington Post* and *National Journal*, had someone monitoring its network around the clock, executive editor Evans Witt said. The organization also set up a system that prevented anyone, even editors, from sending a page directly to the public server. Instead, PoliticsNow staffers messaged the server that a page update was ready; the server then grabbed the content from their machines.

"It's an elegant solution to the problem," Witt said, because a vandal would have to not only break in to the public server in Palo Alto, Calif., but also figure out how to "spoof" the newsroom address in Arlington, Va. The site, a 1996 campaign-season project, stopped publishing earlier this month.

At *The Los Angeles Times* Web site, a monitoring system pages an IT executive if there is a break-in attempt, said Lemont Southworth, systems operation manager for new media. So far, the incidents have only involved authorized users who forgot their passwords, he said.

But the newspaper shut down its bulletin boards about a month ago after someone posing as various celebrities or as one of the bulletin board editors persistently posted hate mail. "We are revamping our security there," he said. □

There's a way for outsiders to steal your processing cycles via the Web. Page 67

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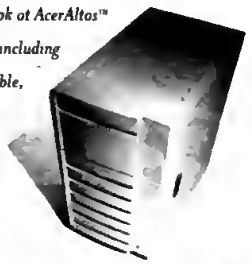

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Vendors 'push' to deliver Web content

▸ *Microsoft, PointCast battle custom services*

By Mitch Wagner and Justin Hibbard
LOS ANGELES

ALTHOUGH Microsoft Corp. and PointCast, Inc. last week announced deals to give away basic "push" technology services, the demand by users to buy push products from other vendors isn't likely to dry up, experts said.

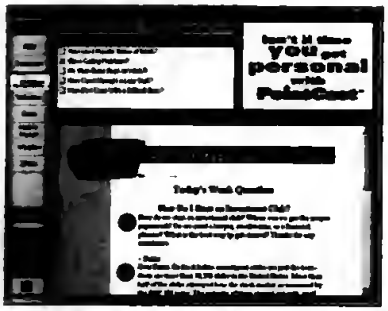
That's because push vendors such as Marimba, Inc. in Palo Alto, Calif., and BackWeb Technologies, Inc. in Santa Clara, Calif., specialize in delivering customized information streams to users' desktops. That approach minimizes bandwidth and allows for greater control by corporate information systems departments.

Also, PointCast technology requires users to accept advertising and nonbusiness-related news, which makes it unattractive to many businesses.

CUSTOMIZE IT

"The biggest thing people seem to really want is personalized content management," said Joe Meadows, World Wide Web proxy service product manager at The Boeing Co. in Seattle.

PointCast, in Cupertino, Calif., last week announced it will allow any Web site to be distributed to desktops worldwide over channels on the PointCast network. Beginning with beta tests next month, PointCast will open its network to anyone for free.



Web site creators can have updated versions of their pages delivered to PointCast users

The producers of every kind of Web site, from big corporate sites to personal Web pages, can register with PointCast and have updated versions of their pages delivered to users of PointCast's client software who sign up to receive updated pages.

PointCast will continue to push information from major media publishers such as Cable News Network, Inc. and *The New York Times* on different channels.

Microsoft separately announced an initiative last week to standardize push technology. The company published a programming interface to let Web site producers take advantage of push technology features built in to the upcoming Version 4.0 of its Internet Explorer.

Microsoft's Channel Definition Format (CDF) specification also was designed to allow third-party push products to interoperate. Microsoft officials said the company will submit CDF to the World Wide Web Consortium for certification as an official Internet standard.

Netscape Communications Corp. opposes the CDF standard because it is unnecessary, said Marc Andreessen, senior vice president of technology at Netscape. That same functionality can be accomplished using Java and Hypertext Markup Language, he said. □

Microsoft, Intel NetPC boasts management tools

By April Jacobs

MICROSOFT CORP. and Intel Corp. last week unwrapped the building blocks for their jointly developed network computer, which appears to be little more than a stripped-down PC with a lot of management features.

Although the NetPC, expected to cost less than $1,000, is a clear move away from the desktop standard of "fully loaded" boxes in the $2,000 to $3,000 range, it still will fuel the Wintel view of the world, analysts said. The NetPC will run Windows operating systems and offer users access to popular Windows-based applications.

Unlike its counterparts, such as IBM's Network Station — which uses software that lets it emulate Windows on the client while executing functions at the server level — the NetPC will run Windows locally and can access applications from the server or its own hard drive.

COST-SAVINGS

The NetPC's real savings, according to Microsoft, Intel and analysts, will come from management software — namely Microsoft's Zero Administration for Windows Initiative and Intel's Wired for Management guidelines.

The Zero Administration software will let information systems managers accomplish tasks such as distributing software and driver updates from a remote central location. Wired for Management focuses on the same types of issues, putting configuration and instrumentation at the fingertips of IS. The tools are expected to be available by year's end.

INTERNET DEVICES

Despite cautious statements by analysts that sealed boxes that run Intel components and modular designs could lead to thinner profit margins and little opportunity to add value, PC giants Dell Computer Corp. and Compaq Computer Corp. gave their support. But officials at the two vendors said the companies are equally committed to providing more manageable PCs, which still will be aimed at knowledge workers.

Given last week's release of the formal specifications, users can expect to see some boxes available in the second half of this year.

Users appeared to be enthusiastic about the network computer concept.

"The ability to minimize configuration headaches is attractive," said Frank Delargy, senior IS manager at Waltham, Mass.-based Polaroid Corp., which is migrating about 5,000 users to Windows 95 and Windows NT.

THE NETPC FEATURES

- Remote management
- Automatic updates in off-hours possible
- Case is sealed to prevent modification by end users
- Systems can be configured and installed over network
- Price: Less than $1,000

Delargy said he is keeping his options open and plans to look at NetPC and its rivals from Sun Microsystems, Inc. and others. Polaroid won't scrap PCs before their life cycle has expired, he said.

"We will be doing an evaluation process, but we need to have real things to evaluate, and it has to be proved first. It seems like [the market is] just exploding right now with options. And then the whole architecture seems to be wriggling around," he said.

Compaq officials have said the Houston-based company will deliver a NetPC in the second half of this year.

Officials at Round Rock, Texas-based Dell said their company is also committed to the specifications for the NetPC, which it helped to co-author, but isn't ready to announce any products.

"We're still evaluating customer demand," a spokesman said. □

Exchange 5.0 adds IP support, but lacks key features

By Barb Cole

SUPPORT FOR INTSANET protocols in the latest revision of Microsoft Corp. Exchange is expected to ease deployments. But the company — and its users — are already looking toward enhancements that will further aid large sites.

Microsoft last week rolled out Exchange 5.0 at Internet World/Spring '97 in Los Angeles. The upgrade supports a handful of Internet protocols, including Post Office Protocol 3, Network News Transport Protocol and Lightweight Directory Access Protocol.

But in a briefing at the trade show, Microsoft officials confirmed user suspicions that Version 5.0 lacks some key features sorely needed by large sites.

Brian Leonard, senior business analyst at the Carolina Power & Light Co. in Raleigh, N.C., said the support of World Wide Web clients alone wouldn't persuade him to upgrade. "But when you add the ability to handle Net News, it gets more compelling," he said.

"[Exchange 5.0] isn't an earth-shaking release," said Greg Scott, information systems manager at the College of Business at Oregon State in Corvallis. The biggest improvement is that users can access Exchange using Web browsers, Scott said. "The overhead [seen with Exchange 4.0] of having to distribute separate mail clients was a formidable task," he said. Scott has been running the Exchange 5.0 beta for months as a production server.

Among the soft spots in the much-anticipated release, users said, are that Web browser users can't send attachments and Version 5.0 doesn't lift the 16G-byte limit on mail server storage. That has created less-than-stellar scalability at some sites.

"We know that we very quickly need to break the 16G-byte limit and add support for IMAP4," said Greg Lobdell, a group product manager at Microsoft. Internet Mail Access Protocol 4 (IMAP4) is a more advanced protocol that gives users more flexibility in downloading mail.

Fixing the 16G-byte limit also may prevent users from eyeing other vendors' products or Microsoft's Commercial Internet System, also released last week, as a more scalable alternative to Exchange [CW, March 3].

Lobdell said these enhancements are slated for the second half of this year, but he declined to specify whether they would come in the form of a service pack or upgrade. □

Monkey on your back #41: How to choose the hardware when you've already chosen Windows NT®

If you're compiling a short list of Windows NT® hardware, based on the Intel® Pentium® or Pentium Pro Processor, take note: Only one – Digital – has developed a line of servers, workstations, desktops, and notebooks that was literally born to run Windows NT. One more point to jot down: Our heritage in multivendor integration and enterprise-level computing makes us uniquely qualified to help you migrate smoothly to this robust operating system. Add the fact that we have utilized our alliance with Microsoft® to offer you unparalleled service and support, and your choice becomes even easier. Remember, you chose Windows NT to let your users access mission-critical data from their desktops and notebooks. Make sure your new hardware is up to the task. For your nearest reseller, call 1-800-DIGITAL, or visit www.windows.digital.com.

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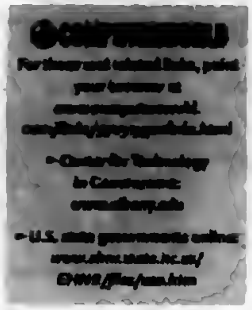
State IS workers seek greener pastures

▸ Conference outlines government brain drain

By Patrick Thibodeau
FALLS CHURCH, VA.

THE EMPLOYMENT trend for state government IS workers can be summed up in two words: "I quit."

States are losing key information systems employees to higher-paying jobs at private companies at an accelerating rate, according to several state officials. "Recently, a $56,000-a-year telecommunications analyst was hired away by a fledgling telecommunications venture that will make him available to us under contract for $250 an hour," said Carolyn Purcell, executive director of the Texas Department of Information Resources in Austin. "I can assure you, we will buy some of his services." At that rate, Texas would have to pay the former employee $10,000 for a 40-hour week.



OUTSOURCING WINS

The state's loss is an outsourcer's gain, participants at last week's State of States conference here learned.

Nebraska is turning to more outside contractors for application development work as employees leave. But "it's cheaper for us to actually hire people and pay them benefits to do that kind of work than it is to contract," said Rod Armstrong, coordinator of the state's Information Technology Office in Lincoln.

The brain drain of state IS workers is one of several trends that are troubling state IT leaders. The most significant issue is the year 2000 problem. Analysts and state officials said the cost of fixing the date glitch could make it difficult for states to meet federal welfare reform mandates, curtail routine application development and sidetrack the trend toward electronic commerce.

STATES TECHNOLOGY TRENDS

- State officials say loss of IS workers to private business for higher pay is accelerating.
- Electronic commerce can save states money, raise new revenue and bring government closer to the people.
- States recognize the need for procurement processes that keep pace with technology development.
- The year 2000 problem may force states to shelve application development projects and new initiatives.

William H. Lindner, secretary of Florida's Department of Management Services in Tallahassee, told the 150 conference attendees that electronic commerce is "on the brink of exploding" at the state government level.

For example, Florida's state purchasing information is available online. Vendors can search a database to find out what state departments and agencies are buying. The service has about 1,200 subscribers, who pay $30 per month for access.

State leasing information is also accessible via the Web. The service makes it easy for small landlords to compete with the larger agencies that have typically dominated state leasing contracts. In the end, "prices will go down, competition will go up — the network will level the field," Lindner said.

Electronic commerce can "make government user-friendly online," said John Kost, a senior vice president at Federal Sources, Inc., a McLean, Va.-based consultancy and one of the conference sponsors.

Other sponsors were the National Association of State Information Resource Executives in Lexington, Ky., and *Government Technology* magazine in Sacramento, Calif.

Procurement reform also was high on the list of state trends. State officials said they will be looking for public/private partnerships with IT vendors. □

Texas may outsource welfare IS

By Thomas Hoffman

TEXAS GOV. George W. Bush has Texas-size plans to open bidding on an ambitious welfare outsourcing contract that could slash 40% from current costs through automation and job cuts.

But if Texas officials bypass formal federal approval on the proposed five-year, $2.5 billion outsourcing project, the state could risk losing billions of dollars in federal aid. Texas isn't legally bound to get federal approval on the outsourcing deal, which would include the transfer of information services that support some or all of the state's 21 social-services programs.

But a spokesman at the U.S. Department of Health and Human Services said Texas "could jeopardize federal funding" if the project doesn't meet federal requirements. "We can't stop them from proceeding, but if they do so, they proceed at their own risk," the spokesman said.

Sources said federal authorities are leery about giving private companies so much control over welfare funding, largely because the federal government matches state dollars 2-to-1 on several large welfare programs.

BIG JOB LOSSES

Other sources said labor unions are lobbying the federal government to delay or impede the project, because 7,000 out of 12,000 state IS employees might lose their jobs.

The contract, called Texas Integrated Enrollment Services, would let private outsourcers create and possibly run a computer system used to screen welfare applications for more than $8 billion in benefits. Sources said the contract could save the state as much as $180 million per year. Companies eyeing the contract include:

- The team of Bethesda, Md.-based Lockheed Martin Corp., IBM and the Texas Workforce Commission.
- The team of Plano, Texas-based Electronic Data Systems Corp.; Unisys Corp. in Blue Bell, Pa.; and the Texas Department of Human Services.
- Andersen Consulting in Chicago. □

COST MANAGEMENT

Cisco chargeback package targets ISDN usage

By Bob Wallace

CISCO SYSTEMS, INC. is shipping an unannounced software package that will let network managers identify, control and charge back ISDN costs.

The Cisco Enterprise Accounting line will eventually expand to include applications that manage and control the cost of other wide-area network lines.

Control and chargeback of WAN lines is important because transmission costs account for more than 80% of total network expenditures, according to Dell'Oro Group, a research firm in Portola Valley, Calif.

CISCO'S ISDN MANAGEMENT PACKAGE WILL:

- Let firms charge back and allocate costs to individuals, locations and equipment
- Help optimize network resources and perform accurate capacity planning
- Monitor network equipment to make sure it is functioning properly and not wasting ISDN bandwidth
- Help IS managers determine if network resources are being used in a manner consistent with corporate policy

CISCO IS FIRST

"We're desperately seeking enterprise applications that will allow us to distribute WAN costs to end users on our 346-site statewide network," said Carl Hotvedt, bureau chief of telecommunications operations for Montana. "We can't find the tools we need to do this, and we have to change the end-user perception that bandwidth is free."

San Jose, Calif.-based Cisco is the first of the top-tier internetworking vendors to announce a package with Integrated Services Digital Network (ISDN) control capabilities.

Cisco Enterprise Accounting Version 1.0 includes workstation software that polls usage data from any Cisco router or remote access server that runs Release 11 of its operating system.

The raw data is passed to a PC that runs Windows NT or Windows 95 and that filters and translates the information into call detail records. They are stored in a relational database.

The package uses the records to create accounting, cost allocation and traffic statistics and exception reports for IS managers.

"This would definitely help us by providing detailed usage information, which is sorely needed," said Saul Adler, a network manager at Bankers Trust Co. in New York.

"Cisco's on the right track, and we're interested in [the package], but we need to see what report format is provided," he said.

The package's major shortcoming is that it covers only ISDN lines.

"While ISDN is a good strong step in the right direction, it's just a first step," said Hotvedt, whose statewide network comprises ISDN and numerous T1 lines. "This package won't solve all our problems initially, but Cisco's willing to have it cover other services down the road."

Cisco officials said the package will be broadened to cover other WAN services, but they wouldn't give specifics.

The package will cost $8,995 and is shipping now. □

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Wintel ambitions trigger user, vendor concerns

CONTINUED FROM PAGE 1

veiling of the Wintel NetPC specification by Intel and Microsoft details a closed box that runs on Microsoft software and uses Intel components. The spec won seemingly grudging support from hardware makers who were uncertain about how to add value into that mix (see related story, page 12).

ANALYSIS

Laptop makers, meanwhile, have been overwhelmed for months by the unending torrent of new chips from Intel (see story, next page). The speed at which Intel is moving is also nerve-racking for some customers. Among other things, users said rapid laptop chip announcements have created confusion in that market.

"People get confused, they hear about MMX and faster, cheaper, better," said Bruce Benham, vice president of information systems at Re/Max International, Inc. in Englewood, Colo. "There's a PR blitz from Intel and the vendors about a laptop, and people don't always stop and think, do I really need that much horsepower?"

NT's flaws "make it difficult for us to use it as a stand-alone enterprise server"

DECISION TIME

In the shadow of what some call the Wintel monopoly stands corporate America, which is trying to decide how deeply to buy in to proprietary technologies controlled by these two companies. The debate is similar to past concerns about the corporate addiction to IBM.

Many users, vendors and analysts laud the duo's contributions, but there are still concerns about slipped deadlines, not-quite-finished products and the pressure for continuous upgrades.

Eric Dickstein, lead technical analyst at Continental Grain Corp. in New York, said he is concerned that with so much unchecked power, there is nothing users can do to pressure Microsoft to ship products on time.

"Microsoft can ship a complete product on time, if they choose. They were able to turn the entire organization around to get Internet products out the door within a year. But in markets that it dominates, Microsoft does what it pleases, users be dammned," Dickstein said.

Mike Nash, Microsoft's director of product marketing, said the company in the past two years has gotten better at giving users more accurate dates and meeting delivery schedules.

It's up to users to draw the line on just how dominant they will let Microsoft become in their organizations, said Dave Eisenlohr, vice president of data center operations at the Pacific Stock Exchange in San Francisco. "If any vendor's product, Microsoft included, doesn't cut it in terms of performance and support, I don't sit on my hands. I talk with my feet and my pocketbook," Eisenlohr said.

But some top-tier Intel customers are crying foul. For example, 3Com Corp. blamed Intel specifically for its poor performance in the first quarter this year. Compaq Computer Corp. has also feuded with Intel. And Microsoft has long been a moving antitrust target for some of its fiercest critics, competitors and the U.S. Department of Justice.

Vendors such as 3Com are feeling increased competition as Intel — in the past year — introduced modular designs for its chips in the laptop and desktop arena and bundled processors, system clocks and memory on to single units. It also pitched plans for higher-level features that include remote and local systems management and support for new technologies such as MMX.

Intel officials say those more modular architectures will help hardware vendors get their products to market more quickly and will let them develop technology for higher performance more quickly.

Jeff Krisa, a product marketing manager at Intel, said as the PC has gotten more powerful, its design complexity has increased. "All we're doing is providing new building blocks and hoping for market acceptance," he said.

But Michael Slater, editor of "The Microprocessor Report," called Intel's latest laptop chip announcements a mixed blessing, because the chips require that vendors redesign boxes.

Reaction to Intel's replacement for the Pentium Pro, a new architecture codenamed Klamath, also has been mixed.

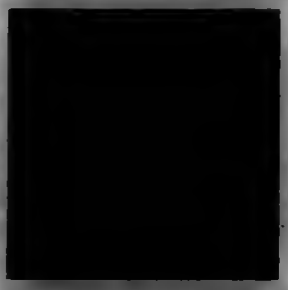
Analysts such as Dean McCarron at Mercury Research, Inc. in Phoenix, said Klamath's higher performance comes at the expense of hardware makers' abilities to choose where they get the building blocks for their boxes.

Microsoft is broadening the Windows operating systems environment to include a universal browser and application interface. That could leave users in a Windows-only world while stifling independent and some say possibly more innovative alternatives.

Microsoft said it will continue to offer users a choice and will develop multiple interfaces to fit their needs. But it recently questioned cross-platform support in an interview with *Computerworld* reporters.

Even so, Microsoft insisted it supports open platforms.

PROCESSOR PROGRESSION



March 1995
120-MHz Pentium introduced
3.2 million transistors
For desktops and notebooks

June 1995
133-MHz Pentium introduced
3.3 million transistors
For high-performance desktops and servers

November 1995
166, 180 and 200-MHz Pentium Pros introduced
5.5 million transistors
For high-end desktops, workstations and servers

January 1996
150-MHz Pentium introduced
3.3 million transistors
For high-performance desktops and servers

"In the past 18 months, Microsoft has delivered a wide array of standards-based Internet enhancements to our products. We're committed to delivering enhancements to Windows to enable easier and richer access to information," Nash said. "We are making some of our platform technologies available to any desktop."

Windows NT's unfinished business

Even as Microsoft plays catch-up in the Internet browser and server wars and propels Windows NT further up the enterprise ladder, the company has left a string of unfinished business — in the form of missing utilities and baseline functionality in the operating system.

That, and the compatibility, migration and cost issues revolving around Windows 95 and Windows NT, has left many users scratching their heads in frustration and looking for guidance.

The thorniest problem so far — and the problem acknowledged by Microsoft as such — is that users who are moving from Windows 95 to NT must completely reinstall the operating system and all applications from scratch.

Other areas of concern include the following:

- **Limited backward compatibility among 16- and 32-bit Windows applications.**
- **NT's lack of support for disk quotas. This means a power user could consume enough disk space to affect server operations, resulting in slower performance or server crashes.**
- **Shoddy maintenance releases that create more bugs than they fix. Service Pack 2, released in late December, was incompatible with the top antivirus software packages, resulting in system crashes.**
- **NT's backup and restore utilities don't back up all files.**

Users and analysts acknowledged that Windows NT's current limitations haven't impeded momentum of the operating system.

And according to the latest statistics from market research firm International Data Corp. in Framingham, Mass., Windows NT Server shipments grew by 85% last year.

But despite NT's seemingly unstoppable momentum, its shortcomings have curtailed its deployment as an enterprise server running mission-critical operations.

This could spell trouble for Microsoft, observers said.

Mike Fink, chief technology officer at Systron, Inc., a New York-based systems integrator, said incompatibilities between the Windows 95 and NT platforms are "a big issue" for his corporate customers.

He noted that having to reinstall everything from scratch when migrating between the two environments is a "major source of pain" that involves "major time and angst."

"Windows NT 4.0 ... has a number of flaws that make it difficult for us to use it as a stand-alone enterprise server," said Ted Kull, manager of LAN systems opera-

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Laptop makers point finger at Intel for woes

▸ *Chip maker blamed for pushing new technology with few benefits too fast*

By Mindy Blodgett

IN THE LAPTOP WORLD, as in the desktop realm, Intel Corp. is so dominant that industry analysts laid some of the blame for last year's laptop woes at the chip maker's door.

Mobile warriors on the prowl for equipment were stymied by short supplies, inadequately tested and buggy machines that were rushed out the door and short design cycles.

Last year, Intel released four laptop Pentium chips — 100, 120, 133 and 150 MHz — in rapid succession. Laptop makers had to scramble to solve the heat problems and energy drain caused by the faster chips and meet skyrocketing demand for notebooks. Still, Intel pushed the vendors to keep up with the chip release schedules.

"In the past, Intel seemed to view the laptop market as the bastard stepchild of the desktop world."

– Randal Giusto, IDC

"It's a Wintel world," said Randal Giusto, an analyst at International Data Corp. (IDC) in Framingham, Mass. "In the past, Intel seemed to view the laptop market as the bastard stepchild of the desktop world," he said. Chips designed for desktops were retrofitted into laptops, which present much more complicated design challenges than desktop machines, he said.

Laptop vendors were particularly angry over the announcement of the 150-MHz chip for notebooks, which offered little performance increase over the 133-MHz chip that had been recently released. Many vendors balked at releasing notebooks with 150-MHz chips, which were quickly followed by the Pentium MMX chip.

"The feeling among the vendor community is that Intel needs to more carefully plan future chip enhancements so the vendors can spend more time controlling power budgets in notebooks and other issues," said Gerry Purdy, editor of "Mobile Letter," a newsletter in Mountain View, Calif. □

tions at Educational Testing Service (ETS) in Princeton, N.J. For now, he said, ETS mainly uses Windows NT as a Notes server.

The cost of a Windows NT upgrade is no trivial expense. Kull said the hardware upgrade costs alone "are immense."

He estimated it will cost ETS $5 million to upgrade its 3,000 users because less than 10% of its installed base has the hardware and memory needed to run NT Workstation. And the $5 million figure doesn't include training or labor required to complete the upgrade.

— Laura DiDio

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HEWLETT PACKARD

Databases queue up for distributed users

By Craig Stedman

DATABASES ARE STARTING to be outfitted with "fire-and-forget" queuing technology that promises to free up end users to run multiple transactions without having to wait for a response on each one.

Sybase, Inc. last week announced plans for transaction-queuing software that will be integrated with its SQL Server and SQL Anywhere databases. Oracle Corp. is including similar server-based queuing in its long-promised Oracle8. Microsoft Corp. said its upcoming Falcon message-queuing product will be tied to its database, which is also called SQL Server.

Users on distributed networks or the World Wide Web will be able to use the queues to place orders or run other jobs without locking up their systems while the transactions get processed by a database server. The queuing software would notify users when transactions are done.

Several information systems managers said the technology could improve business productivity by cutting the time users spend twiddling their thumbs.

"Some days our database server is totally swamped, while there's almost nothing going on at the application server," said Frank Malangone, MIS manager at Camp Dresser & McKee, Inc., an engineering consulting firm in Cambridge, Mass. That means users running financial applications are doing a lot of idle waiting for responses from the company's Oracle7 database, he added.

EFFICIENCY

Queuing also could allow more efficient network use because users wouldn't have to maintain live database connections while waiting for responses, Malangone added. Currently, Camp Dresser & McKee gets saddled with connections "that are using resources but not really doing anything," he said.

Sit-and-wait transaction processing also can slow down customers trying to place orders or get support, said Richard Kittinger, senior developer and database administrator at HBO & Co. The Atlanta firm develops medical software based on Sybase's SQL Server, but it also uses the database internally to run its customer-support and help-desk applications.

Customers calling in for support have to wait for the database right along with HBO's service workers, Kittinger said. Database queues are expected to speed things up and "get people off the phone quicker, which makes them happy and reduces our telephone traffic," he said.

Sybase, in Emeryville, Calif., has made a developer's kit version of its DBQ software available for free downloading from its Web site (www.sybase.com). The full queuing product is due to ship later this year, but Sybase didn't provide a specific date or disclose pricing. The company said it also plans to expand DBQ support to Microsoft's SQL Server and Redwood Shores, Calif.-based Oracle's database by year's end.

Herb Edelstein, president of Two Crows Corp., a consultancy in Potomac, Md., said queuing technology should help users avoid the temptation of re-entering a transaction when a response doesn't come back right away. That will help assure that distributed transactions get processed only once, he said. □

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UUNET

Lawyer disputes year 2000 warranties

▸ *Says most software licenses won't protect users from disaster*

By Thomas Hoffman
LAKE BUENA VISTA, FLA.

SEVENTY HARD-NOSED contract negotiators who recently jammed a meeting room here were stunned. A prominent litigator had just told them that most software licenses don't give users legal protection against year 2000 calamities.

Users have limited legal recourse against their software vendors because the contracts don't provide an explicit warranty for the year 2000 date rollover, said attorney Peter Frazza.

He delivered the wake-up call at the Advanced Procurement Strategies conference, sponsored by International Computer Negotiations, Inc. in Winter Park, Fla.

"I've never heard of this year 2000 problem before, and I don't like what I'm hearing now," said conference attendee Charley McCurdy, purchasing chief at the Mississippi Public Service Commission in Jackson.

McCurdy and other contract managers said they were bewildered and concerned about the looming software disaster, which still isn't well-known outside the data center.

Experts said it is important for information systems managers to include senior executives, contracting officers, accountants and legal experts on the year 2000 crisis teams.

"I can appreciate that lawyers are despised for many different and often justified reasons. But for year 2000, it's a good idea to have one involved," said Frazza, an attorney at Budd Larner Gross Rosenbaum Greenberg & Sade in Short Hills, N.J.

GET IT IN WRITING

Frazza, who represented National Car Rental System, Inc. and First Fidelity Bank NA in landmark software cases in the early 1990s, recommended several steps users can take to improve their legal position.

"I can appreciate that lawyers are despised for many different and often justified reasons. But for year 2000, it's a good idea to have one involved."
– Peter Frazza, attorney

One tactic is to send letters instructing vendors to make their software 2000-compliant before a certain date or risk nonrenewal of maintenance agreements.

Those letter-writing campaigns paid early dividends for BankBoston. The Boston-based bank recently received its first written guarantee from a vendor that its lending and credit software will work in 2000, said Dan McSheffrey, vendor manager for the bank's millennium project team.

IMPLIED WARRANTIES?

Another lawyer with year 2000 experience disagreed with Frazza's contention that licenses must have a year 2000-specific warranty for users to have legal protection.

Even if there isn't a year 2000 clause included, contracts still include "implied warranties" that require the software to perform, said Vito Peraino, an attorney at Hancock, Rothert & Bunshoft LLP in Los Angeles. But Peraino and Frazza said no legal precedents have been established that support Peraino's claim. "It's not a risk worth taking," Frazza said. □

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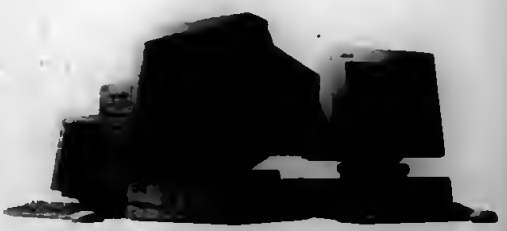

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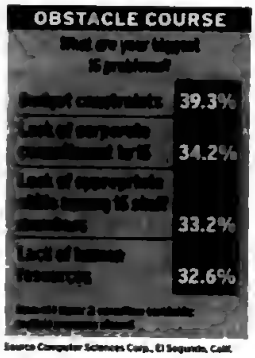


Source: Computer Sciences Corp., El Segundo, Calif.

INDUSTRY SURVEY

IS execs see increase in job security

By Thomas Hoffman

FOR THE THIRD consecutive year, the most critical issue information systems executives face is how to better align IS with corporate objectives.

That is according to Computer Sciences Corp.'s (CSC) 10th annual "Critical Issues of Information Systems Management" study.

Seventy-seven percent of respondents said the Internet and the World Wide Web are the most critical technologies their organizations must adopt in the next five years to remain competitive. Electronic commerce and groupware also ranked high on the list of critical emerging technologies.

CSC, in El Segundo, Calif., surveyed 614 senior-level IS executives worldwide, across a broad range of industries. Most respondents work for companies that report annual revenue of more than $1 billion.

The good news for chief information officers is that their job security has improved slightly.

The percentage of respondents who reported that their organization had replaced its CIO in the past two years dropped from 38.5% last year to 30% this year. The mean tenure of CIOs at the companies surveyed is five years.

More than 60% of respondents said they plan to increase their IS budgets this year. Just 15% said they anticipate a budget cut.

Overall, North American budgets jumped 7.6% this year, according to the survey. □

Web spawns techno-marketers

▸ *E-commerce forces IS to learn about business*

By Mitch Wagner

AT MANY COMPANIES, the merger of information systems and business practices is more management theory than day-to-day reality.

But electronic commerce is changing that at companies that have strategic commitments to do business online: It's becoming hard to tell the IS managers from the marketers without a business card.

For example, Century 21 Real Estate Corp. in Parsippany, N.J., last year hired Elesia Birnbaum as a marketing manager to help oversee brand development.

As a former public relations person for a computer networking company, Birnbaum had enough technology know-how to not only oversee Century 21's television and radio campaigns, but also to oversee a site on America Online and an emerging World Wide Web site.

The sites are used to communicate with consumers and with 80,000 Century 21 real estate agents nationwide.

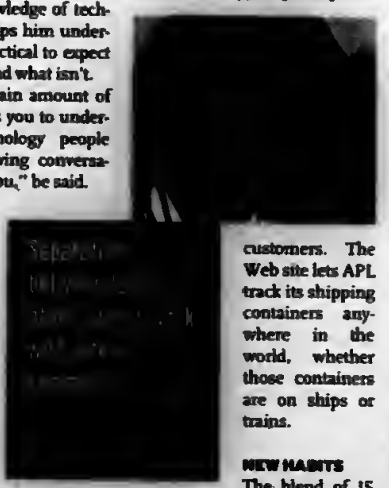
When Birnbaum sought someone to manage Web operations, she chose Adam Karp, who had marketing skills and a familiarity with Perl and Microsoft Corp.'s Visual Basic programming.

Karp said knowledge of technology issues helps him understand what is practical to expect on the Internet and what isn't.

"Having a certain amount of knowledge allows you to understand the technology people when they're having conversations in front of you," he said.

TWO SCHOOLS

In a conventional business computing environment, the IS manager can still afford to keep business details at a certain distance, said Diane Silver, vice president of information strategy at American President Lines (APL) in Oakland, Calif.



But that strategy won't work with electronic commerce, where computer systems are the essential foundation for the business, not just supporting technology.

"Internet commerce crosses all business processes, and the entire organization has to work together," Silver said.

APL built a cargo-tracking Web site for 75 large corporate customers. The Web site lets APL track its shipping containers anywhere in the world, whether those containers are on ships or trains.

NEW HABITS

The blend of IS and business in Internet commerce also means IS managers need different work habits.

Lands' End, Inc. discovered two years ago that when the marketing and IS departments worked separately, its electronic commerce site went nowhere, officials said.

Marketing people didn't know the Internet, and IS managers didn't know how to sell clothing and other consumer goods.

But once the marketing staff learned the technology and the IS staff learned about the company's business needs, Lands' End's electronic commerce strategy took off.

The clothing catalog company had one of the first sites that offered significant sales on the Internet.

Lands' End now does trendsetting work by tying its Internet commerce site to mainstream business systems for inventory and shipping management.

Marketing people work differently from IS managers, said Randy Lagman, a business systems specialist at Lands' End in Dodgeville, Wisc.

"In IS, we try to think of the best way to implement something," he said. "Marketing guys don't care. They say, 'Let me know when it's done — and it better be tomorrow.'"

Yet the transition from the IS work style has been a relief for Lagman. He said he likes the more intuitive work habits of marketing managers.

"I'm more comfortable in a casual role," Lagman said, although he still reports to the IS department. □

Avatar launches hard drive targeted at road warriors

By Matt Hamblen

USERS OF REMOVABLE hard drives: Beware of Shark attack.

Officials at Avatar Peripherals, Inc. in Milpitas, Calif., today were scheduled to announce the Shark 250, a removable hard disk drive small enough to fit in a shirt pocket. It will cost $299.

The Shark 250 is less than half the size of the Zip drive from Iomega Corp. in Roy, Utah, and about a third as heavy. The Zip drive uses a 3.5-in. floppy disk and costs $199. The Shark 250 uses a 2.5-in. removable hard disk that stores 250M bytes of data — 2.5 times the capacity of the Zip drive.

Phil Devin, chief storage analyst at Dataquest in San Jose, Calif., said the Shark 250 will find a market with traveling executives and sales representatives. Two beta testers said they like the Shark's size, ruggedness and another unique feature: It is powered by the keyboard/mouse port. Users can run it off a laptop battery without having to use the separate battery pack that the Zip drive requires.

"You don't have to carry a brick of power supply for the drive. That's a big advantage," said Brian Wright, who has been testing the product for two months. "It pulls down the laptop battery, but not much."

Wright, a sales representative at AMS Computer Stores in Battle Creek, Mich., has had plenty of experience with Zip and another competitor, the EZFlyer 230 from SyQuest Technology, Inc. in Fremont, Calif.

The EZFlyer 230 uses a 3.5-in. removable hard disk that holds 230M bytes of data. "Shark is by far the best," Wright said. "It holds so much for the size."

Analysts said the Shark's success may be limited because customers are unfamiliar with Avatar, a company owned by Avatar Co. in Thailand. "Its future depends upon how they can price it and how much they invest in an image program," Devin said. □

Avatar	Iomega	SyQuest
Shark 250 (hard disk)	Zip (floppy disk)	EZFlyer 230 (hard disk)
Keyboard/ mouse port	AC adapter	AC adapter
250M bytes	100M bytes	230M bytes
2.5-in.	3.5-in.	3.5-in.
$299	$199	$299

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Geac changes markets mid-SmartStream

▶ New D&B owner to drop manufacturing module

By Randy Weston

THE FORMER Dun & Bradstreet Software is reinventing itself — again.

Officials at the Atlanta firm's new owner, Canadian company Geac Computer Corp., last week said the company will drop the manufacturing module of the SmartStream client/server applications package and refocus its efforts on financial and human resource modules.

That marks a quick exodus for the company from the enterprise resource planning market, which is dominated by German giant SAP AG and Oracle Corp. in Redwood Shores, Calif.

The change in direction comes at the expense of about 20 customers who use the manufacturing module.

"It's a matter of priorities," said Douglas Percy, Geac's executive vice president and general manager of the SmartStream division. "Our core competency is financials and [human resource] systems. We are dedicating our resources to that."

Geac officials last month pledged business as usual at D&B Software.

Geac is keeping the distribution and logistics pieces of its software package, which it wanted to maintain for chief financial officer customers.

Percy said Geac will support the manufacturing module through 2000 while it finds alternatives for customers left in the lurch. But he said no money would be refunded, and Geac hasn't committed to any partnerships with a manufacturing module maker to fill the gap.

VERTICAL MARKETS

Along with the new product direction, Geac officials said the company would direct its efforts at a few select vertical markets: health care, government and business and financial services.

The two announcements spurred one analyst to warn customers off Geac's products until the dust settles.

"If you are not in one of those verticals, you better go visit Mr. Percy right now and ask, 'What about us?'" said Adam Thier, an analyst at Meta Group, Inc. in Stamford, Conn. "If you are not in those markets, don't be buying this product."

Thier and other analysts said potential customers might want to delay purchasing decisions until the long-term situation becomes clearer.

But Thier said the company seems to be heading in the right direction. And users of the financial systems seem to agree.

"I truly believe [Geac] will be stronger for it because they can focus on what they do well," said Joel Muehlegger, project manager at Bemis Corp. in Oshkosh, Wis. "Bemis was looking for the best of breeds. You look and see what package provides the best alternative and go with that," he said. □

D&B HIGHLIGHTS

1990
▶ Dun & Bradstreet Software formed through merger of Management Sciences of America with McCormack & Dodge.

January 1996
▶ its parent, Dun & Bradstreet, splits itself into three independent companies and decides to sell its software division.

June 1996
▶ Boston venture-capital firm Bain Capital steps forward with a $210 million buyout offer in cash and stock.

August 1996
▶ Bain deal quietly falls through.

October 1996
▶ Canadian high-tech conglomerate Geac Computer buys D&B Software for $150 million.

November 1996
▶ Geac splits D&B Software into two divisions: Geac SmartStream, which handles client/server applications, and Geac HostStream, which serves the mainframe application market.

March 1997
▶ Geac discontinues its manufacturing module to concentrate on financials and human resources modules.

WIRELESS TECHNOLOGY

Cisco buys minority stake in start-up RadioLAN

By Bob Wallace

CISCO SYSTEMS, INC. last week took a minority stake in start-up RadioLAN, Inc. in Sunnyvale, Calif., in an effort to become a player in the nascent wireless LAN industry.

Although details of the deal weren't disclosed, sources said Cisco typically buys a minority interest of less than 10% in start-ups.

RadioLAN products let users set up 10M bit/sec. Ethernet LANs faster and at less expense than it would take to modify current cable or buy and install new cable.

The RadioLAN package includes a PC adapter card, a portable desktop radio tower and wireless operating system software.

RADIOLAN AT A GLANCE

Founded: 1993

Headquarters: Sunnyvale, Calif.

Products: Devices that create wireless LANs

Status: Privately held

Supports: 10M bit/sec. shared Ethernet LANs

The RadioLink wireless operating system is fully interoperable with network operating systems, including NetWare from Novell, Inc. in Orem, Utah; Windows NT from Microsoft Corp. in Redmond, Wash.; and Vines from Banyan Systems, Inc. in Westboro, Mass.

The package delivers 10M or 20M bit/sec. full-duplex Ethernet connectivity at a maximum distance of 400 feet using the 5.8-GHz frequency, which guarantees clear reception and doesn't require a Federal Communications Commission license. The cost per node ranges from $499 to $799, depending on the type of PC adapter.

CABLE COSTS

"Where users save is on the hidden cost of cabling or recabling, which can be tremendous," said John Morency, a principal at The Registry, Inc., a consultancy in Newton, Mass. "IS managers can't assume that buildings they move into have wiring that's ready to support LAN speeds, especially in older sites."

Cisco executives said the San Jose, Calif., internetworking giant will eventually incorporate RadioLAN's wireless LAN technology into Cisco's products, but they didn't give a timetable.

The planned deal comes just months after Cisco bought a minority stake in Netro Corp., a Santa Clara, Calif., start-up that uses wireless technology to link buildings.

Although many vendors, including AT&T Corp. and Digital Equipment Corp. in Maynard, Mass., have long offered wireless LAN packages, they support Ethernet speeds of less than 10M bit/sec., Morency said. "Cisco's stake in RadioLAN will definitely raise the visibility of wireless LAN technology, a technology whose time has come." □

COMPUTERWORLD

Leadership Series

How to Keep Knowledge Management From Flickering Out

Too many goals, too much information and unenthusiastic personnel can dim your knowledge management efforts. Here's how to keep your knowledge management initiative shining bright.

IT TOOK THOMAS Edison over 6,000 attempts before he found a filament for his first light bulb. As he said, "Genius is 1% inspiration and 99% perspiration."

Likewise, implementing knowledge management on an organizationwide basis is no overnight project. Companies are using knowledge to foster customer intimacy, operational excellence and innovation, but it takes perseverance and hard work. Just what makes it so hard?

I've reflected on some of the work we have done in the area of knowledge management. I'd like to share with you some of the most difficult implementation issues we've seen and how they have been overcome.

Too Much, Too Soon

THE PRESSURES on knowledge management projects are often overwhelming. Organizations seek immediate bottom-line benefits and direct results, frequently driving people to set out three-stage goals that are way too ambitious. It's no wonder that one of the major implementation problems is simply trying to accomplish too much at once.

Trying to do too much almost became a real problem for one financial services company. Management was under a lot of pressure; the company's growth rate was lagging behind comparable companies in its industry. The firm needed to be better at anticipating market and customer demand and developing new products that would meet these

emerging needs. Management reasoned that a corporatewide infrastructure to share knowledge could help the firm be more innovative and thus help retain customers and obtain additional business.

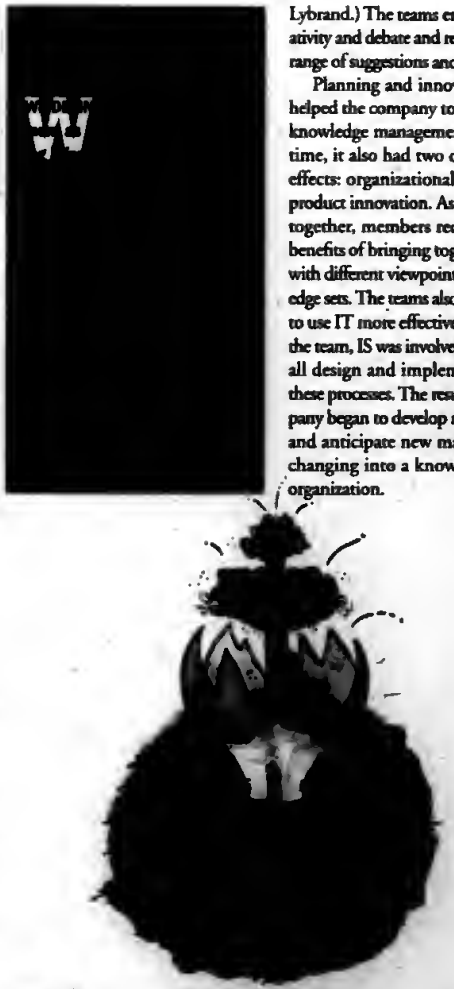
That desire to become more innovative spawned a long list of ambitious goals for this knowledge management initiative. Executives wanted not just to improve product development and anticipate customer needs, but to move the company far beyond its past practices. They wanted their new knowledge infrastructure to boost creative problem solving, something current systems did not support. Management hoped to reach a new level of customer focus, of intimacy, loyalty and enhanced relationships with their customers. Executives felt this required turning the company into a virtual organization, with business units working together through use of technology.

It is impossible to address so many goals at once. Executives need to select their priorities. But how?

Picking one target product area to be "fixed" at a time is the best way to start. Look for the most immediate, tangible results you can provide by knowledge-sharing, while keeping in mind the company's overall strategic direction. The financial services company picked its target by looking at which product lines suffered the most from obsolescence and lack of customer focus and seeing why the people responsible were not very innovative in reviewing those products. They could then figure out what new knowledge should be provided and who needed it most.

Once it's clear where knowledge-sharing can have the most impact, the next step is planning and implementation. The financial services firm did it by creating product development "innovation teams." The teams partner IS staff with product champions, marketing people and other business types. (This is an approach we have also used at Coopers & Lybrand.) The teams encourage creativity and debate and result in a wide range of suggestions and possibilities.

Planning and innovation teams helped the company to prioritize its knowledge management efforts. In time, it also had two other desired effects: organizational change and product innovation. As they worked together, members recognized the benefits of bringing together people with different viewpoints and knowledge sets. The teams also learned how to use IT more effectively. As part of the team, IS was involved in the overall design and implementation of these processes. The result: The company began to develop new products and anticipate new markets, while changing into a knowledge-based organization.



Information Overload

IN AN ERA where it's easy to access a world of information, avoiding information overload is an issue in knowledge management. Sometimes, too much information can hurt productivity instead of helping.

Recently, another organization came to us concerned that it wasn't seeing the business benefits it had expected from the search engines, online information access capabilities and reference tools it had provided its employees. Management had expected to see an improvement in the quality of research and reports; instead they perceived a decline. People were taking even longer to pull research together, and the reports were filled with seemingly irrelevant material. People

ILLUSTRATIONS BY DAVID CLARK

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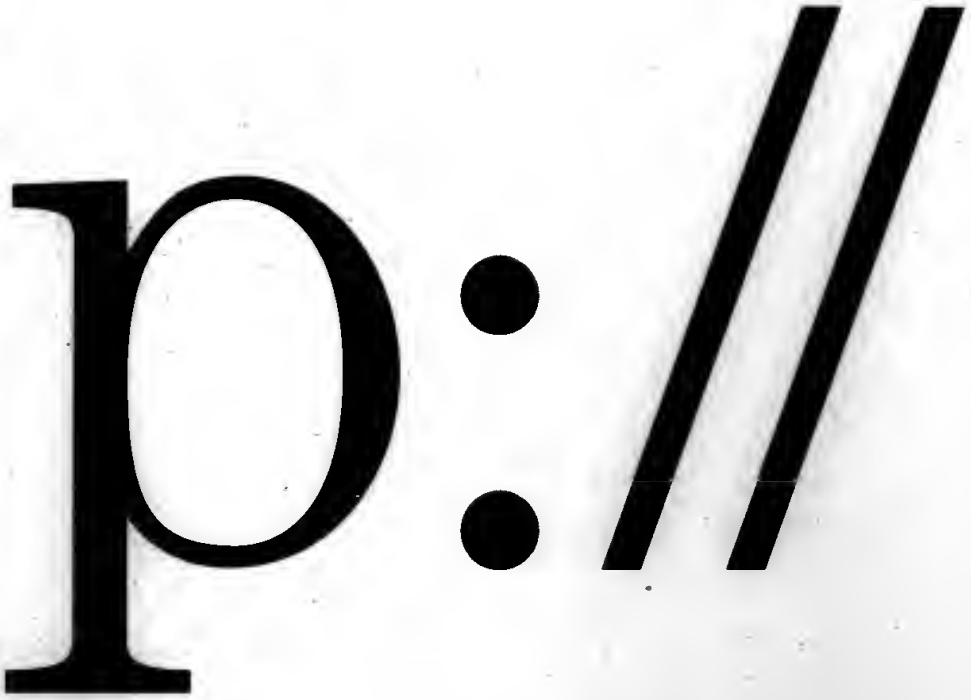

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were overwhelmed by the vastness of the sources now available.

The problem is really not surprising. Just think about how much time is wasted on pointless Web searches by inexperienced people.

The answer? Become a "picky eater." It's more useful to provide quality information and analysis than access to thousands of sources.

Companies need to be selective about their information sources. They should figure out what knowledge is needed to do certain jobs, and how to provide the information. Not should management assume that intelligent agents and filters alone can save their firms from the informatioo ovetload demon. A much more effective way m turn information into knowledge is to choose the best information sources up front, and then use agents and filters to search through that preselected information.

We're taking this approach at Coopers & Lybrand by creating a new kind of library we call CyberLyb. The goal: provide access to the best thinking worldwide. We had our top library and research people select the best business information sources, be they equity research from investment banks, credit analyses from major rating organizations and business and trade periodicals. We also created links to the best Web sites for financial and economic statistics, as well as top online technical resources.

However, picky eating isn't enough; knowledge workers need support m help use the sources they've beeo given. That can be provided through a "content help desk." Just as IT support units answer hardware, softwate and network questions, knowledge managers need to help guide people through the cootent maze. We have such a content help desk in use at Coopers & Lybrand; while we have talked to many organizations that plan to do this, none that we know of has implemented one so far.

Capturing Best Practices

CAPTURING AND implementing best practices is one of the most common reasons companies engage in knowledge management. But how do you know which practices are truly best practices? How do you turn that know-how inm a usable system?

Many companies try to do too much and capture all their company's processes. Instead of best practices, they end up with giant databases that are unwieldy, unmanageable compilations of practices: some good, some bad, some mediocre and few truly "best." These systems force users to wade through reams of information before getting to any real gems.

What is the answer? Start by fioding the best people. Look for experts who are sought out by their associates when they have questions. Seek out "franchise thinkers" who do the best work and understand the organizational strategy.

How do you find these people? A good approach is to perform "knowledge audits" and create "knowledge profiles" so that you can see what knowledge is needed to perform a particular function and the effects of personality and perspective. They help companies understand what kind of person is likely to succeed in a given position.

A knowledge audit reviews the overall knowledge assets of an organization, or the sources, references, systems, training, etc. that an organization already has in place. These include its people, methodologies, publications, speeches, presentations, work products and lessons learned from experience.

You can think of knowledge profiles as a "yellow pages" of who knows what. They focus on specific aspects of the requirements involving knowledge and their sources as personified in a person or position. A profile can focus on geography, organizational units, industries, company policies, regulations, processes, or whatever is required to understand what knowledge it takes to perform well in a task or function.

These techniques were used by an organization which re-engineered its customer service process. One outcome of the re-engineering was the development of a customer service workstation. Although the workstation was a success, much of the knowledge in people's heads never made it into the workstation. The system lacked "strategy nuggets," the

rules of thumb that those high performers had been using for years to recognize and respond to the customers' hidden messages ("I'm anxious about this." "I'm confused." "Can you really help me?").

Capturing that information became the new goal — both to foster learning and to make sure that if high-performing people left the firm their know-how remained.

The company did a knowledge profile of the various levels of customer service representatives (CSR) to understand what knowledge existed, what the best practices were as done by the high performers, and what it takes from a skills, knowledge and training perspective to perform them. It was then possible to develop methods for knowledge acquisitioo and sharing techniques to capture and disseminate that information.

They found the "strategy nuggets" by using the interview techniques employed by knowledge engineers to develop artificial intelligence systems. In this case, some of the questions asked to create a knowledge profile include:

- What roles do the customer service representatives take when answering calls? (e.g., expert, confidant, 'friend,' salesman, sympathizer?)
- What makes a particular CSR better than another?
- What skills are required to be a good CSR?
- What kinds of knowledge do CSRs need (procedures, regulations, products, industry trends)?
- How do CSRs get this knowledge and keep it current?
- What knowledge and skills are not supported by current tools and training?
- What personality types tend to be most effective in this job?
- Is educational background a critical determinant?
- Is it possible to make a generalization about the "required" personality and background for a particular CSR position?

Using the answers, the company profiled the kind of knowledge and the skills required by CSRs, how important each was for success, how they are acquired both formally and informally and the personalities encountered. The company, with our help, created a template which ranked people as trainee, novice, intermediate and expert depending on their skill in dealing with customers, time on the job and knowledge employed. For each level, they identified any special skills and knowledge required. Besides helping the company decide what kind of people it needed, it helped the firm answer other questions: What are our training gaps? What should we look for in our new people? What knowledge sharing activities do we need? What systems would really get knowledge sharing going in the company?

The result was a knowledge-based system everyone uses and is expected to replenish and update. Initially designed on paper and called the "Customer Service Representative Playbook," it contains scenarios of many different types of calls from customers and how they were handled by those who were identified through the exercise above as high performers who employed best practices. The information could then be used by the less experienced to learn how to handle a given situation.

Ultimately it was translated into a Lotus Development Corp. Notes database on the customer service workstation. The system became the "working memory" of the group. To keep it current, all of the CSRs gather daily to share and record items they learned and new methods they created. They follow carefully thought out guidelioes oo what can be entered, and a simple filtering mechanism makes sure that the information is appropriate. Cootributing knowledge for sharing has become part of the CSRs' daily routine. This not only provides people with needed skills enhancement but stimulates thinking about how to do their work.

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5 Steps to Knowledge Management

THINK backwards. Before developing your own knowledge management systems, think about the end result you seek. How does knowledge fit into the company's most basic needs? What are your company's critical success factors?

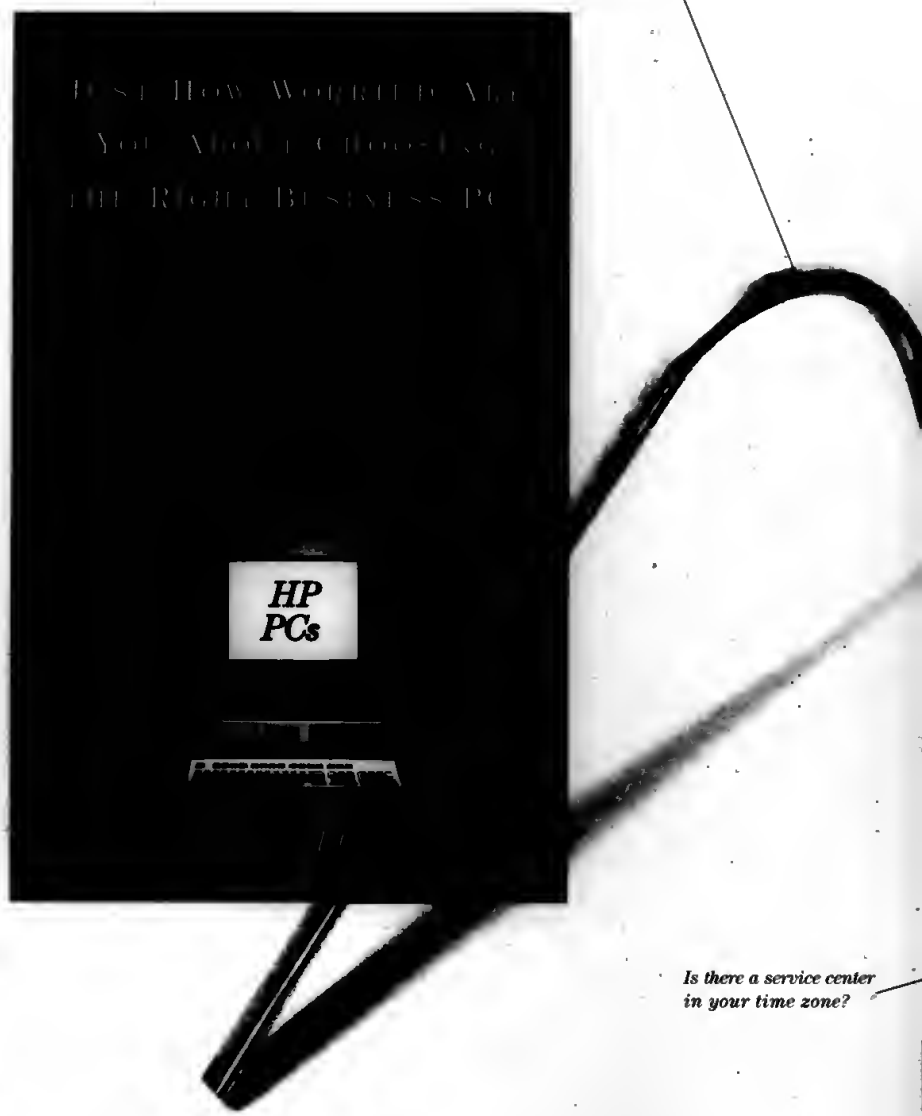
IDENTIFY your company's thought leaders, the ones who are generating innovative insights.

ADJUST THE reward structure. Do your company's star performers tend to share knowledge or keep it to themselves? Are they knowledge hoarders? Rewards should be based on who shares best, not just who knows best. Integrate responsibility for contributing best practices and sharing knowledge within the employee appraisal process.

FOCUS on creating value through application to real situations. Don't just gather and store knowledge in a database somewhere but actively leverage it for daily use.

CONSIDER developing an interactive database where people can easily find and share information on best practices. To control quality, use subject matter experts to review the information that people submit. Have them think about who else could most it, how else it might be used, and where else should it be made available for the most utility.

Will you need to issue new stock to afford them?



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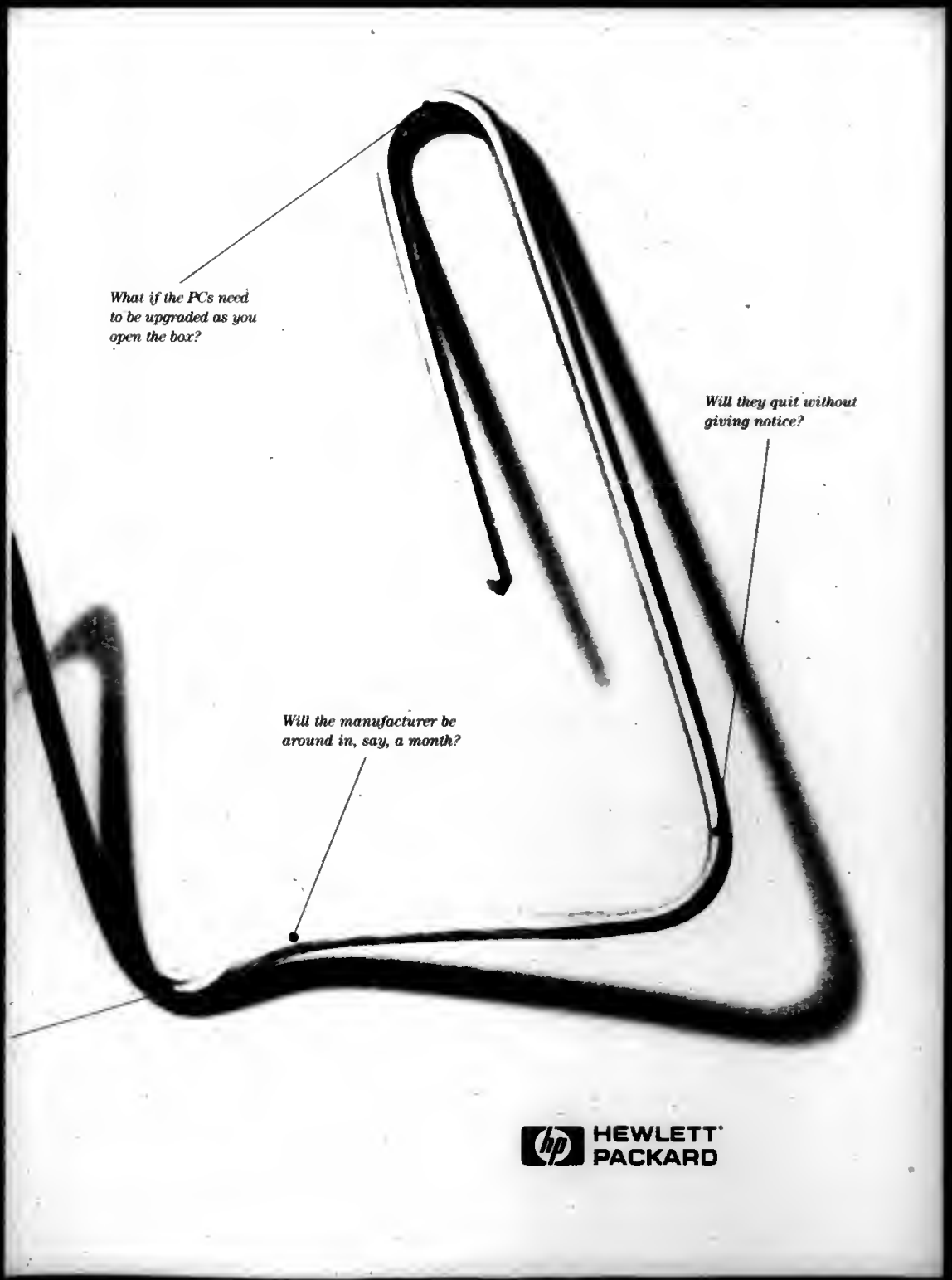
What if the PCs need to be upgraded as you open the box?
Will they quit without giving notice?
Will the manufacturer be around in, say, a month?

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Knowledge Management Web Sites

KNOWLEDGE MANAGEMENT HOME PAGE AT UNIVERSITY OF TEXAS AT AUSTIN
(kman.bus.utexas.edu)
This site is dedicated to knowledge management as it relates to the business world. It includes products for knowledge management, organizations that can provide information on knowledge management and other resources and publications, including papers by knowledge management expert (and U.T. professor) Thomas Davenport.

A BUSINESS RESEARCHER'S INTEREST
(www.brint.com/OrgLrng.htm)
This site provides thousands of pointers to other resources on the Web dealing with Organizational Knowledge Management and Organizational Learning, including articles, books, bibliographies and tools.

SVEIBY - KNOWLEDGE MANAGEMENT
(www2.eis.net.au/~karlerik/index.html)
This Australian site provides an introduction to knowledge organizations, lists books and articles and provides links to research. Two unusual features are links to the sites of Scandinavian companies that practice knowledge management and a description of Tango, a model which clarifies the business logic behind the knowledge organization.

STANFORD LEARNING ORGANIZATION WEB (SLOW)
(www-leland.stanford.edu/group/SLOW)
SLOW is an informal network of Stanford researchers, staff, students and businesspeople interested in learning organizations. One of SLOW's interests is the use of information technology to enable team learning and learning communities. The site includes references to articles, books, videos and other resources.

MIT ORGANIZATIONAL LEARNING NETWORK
(learning.mit.edu)
The site is run by MIT's Center for Organizational Learning, a partnership between researchers and major corporations who are building learning organizations.

INTERNATIONAL WORKPLACE STUDIES PROGRAM (IWSP)
(iwsp.human.cornell.edu)
Through the IWSP, Cornell University conducts research on innovative workplace strategies. This site includes white papers about collaboration and innovative work environments.

RENAISSANCE SOLUTIONS
(www.rens.com)
This site, sponsored by a management consulting firm, includes white papers and notices of upcoming seminars, conferences and schedules of events on continuous learning and other topics.

INNOVATION ASSOCIATES WEB SITE
(world.std.com/~ia)
This firm focuses on strategies for learning organizations and innovation, change and growth. This site includes public training programs, customized onsite training and lists of educational materials.

TELTECH RESOURCE NETWORK
(www.teltech.com)
Teltech Resource Network is a leading independent provider of technical research, analysis and consulting services to U.S. industry.

THE EXECUTIVE REPORT ON KNOWLEDGE, TECHNOLOGY AND PERFORMANCE
(www.knowledgeinc.com)
Knowledge, Inc. is a monthly executive newsletter that covers trends in information technology, organizational learning and knowledge management.

BUSINESS TRANSFORMATION BOOK CAFE
(www.vision-nest.com/BTBookCafe and www.vision-nest.com/BTBookCafe/KGarden)
The Cafe, run by Business Transformation, enables global conversations where executives, labor leaders, managers, professionals, entrepreneurs and all interested in business can explore the deeper issues which shape our working life.

LEARNING-ORG DIALOG ON LEARNING ORGANIZATIONS
(world.std.com/~lo)
This site includes discussion dialogs about learning organizations. It includes information about a Learning-Org mailing list and archive, as well as an amusing section on people's responses to the question, "Why a Learning Organization?" Sponsored by Richard Karash, speaker, facilitator and trainer on learning organizations.

THE FIFTH DISCIPLINE FIELDBOOK/ RESOURCES CONNECTION
(www.fieldbook.com)
Strategies, tools and connections for building a learning organization, based on Peter Senge's popular book on learning organizations.

OTHER MAGAZINE RESOURCES
FastCompany Magazine (www.fastcompany.com) CIO Magazine (www.cio.com)

Avoiding the Wrong People

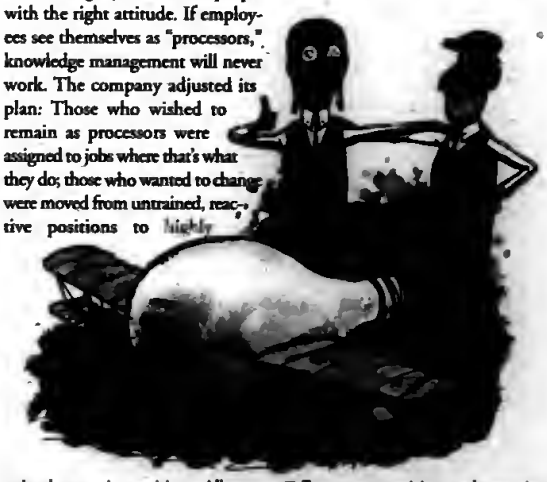
KNOWLEDGE management depends on people — specifically knowledge workers. Sometimes though, companies try to turn the wrong kind of people into knowledge workers.

What do I mean by the "wrong people?" Consider this case:

A financial services company wanted to re-engineer its core processes and related information systems for underwriting, billing and issuance. One objective was to transform two groups of people who work with the planned system — analysts and processors who entered data about the bond operations — into knowledge workers who support each other. This would allow the processors to take on new functions, such as underwriting.

However, the company failed to make a critical connection: Management didn't understand the personal values of the processors, those things which people really care about in their work. Unlike the analysts, the processors didn't have college degrees and didn't have any training in underwriting. Many felt they didn't have the information or training needed to do things differently. But there was another major constraint: Most of them had the attitude of a clerk rather than a creative thinker. They liked processing claims and were simply not interested in this new role.

The lesson? Having a new system is not enough; you also need people with the right attitude. If employees see themselves as "processors," knowledge management will never work. The company adjusted its plan: Those who wished to remain as processors were assigned to jobs where that's what they do; those who wanted to change were moved from untrained, reactive positions to highly trained, proactive positions. All were more satisfied with their work.



There are real and immediate benefits to developing knowledge management strategies, activities and related systems in your organization. But they can be hard to achieve if you don't follow a few steps:

- Don't develop knowledge management systems for the sake of collecting great information.
- Put knowledge to work daily to benefit people, boost performance and improve value.
- When you begin your first knowledge management project, aim to produce a quick business benefit that others can appreciate.
- Focus on acquiring and organizing the most relevant information assets out of all the sources available.
- Take the time to develop software and create methodologies for accessing and analyzing knowledge.
- Remember that you need to understand how people think, not just what they know.

There are many different ways to approach knowledge management, but deal with it we must for success in the 21st century. As one of my favorite professors, James Brian Quinn at Dartmouth College's Amos Tuck School, put it recently: "The only two economies of scale today are distribution and information."

ABOUT THE AUTHOR

Ellen Knapp is Vice Chairman and Chief Knowledge Officer at Coopers & Lybrand L.L.P. in New York. Ms. Knapp is responsible for identifying and leveraging knowledge assets to create competitive advantage and catalyze organizational change at Coopers & Lybrand and for integrating these assets into the firm's programs. She is co-author, with Coopers colleague Peter G.W. Keen, of *Every Manager's Guide to Business Processes*, published by the Harvard Business School Press.

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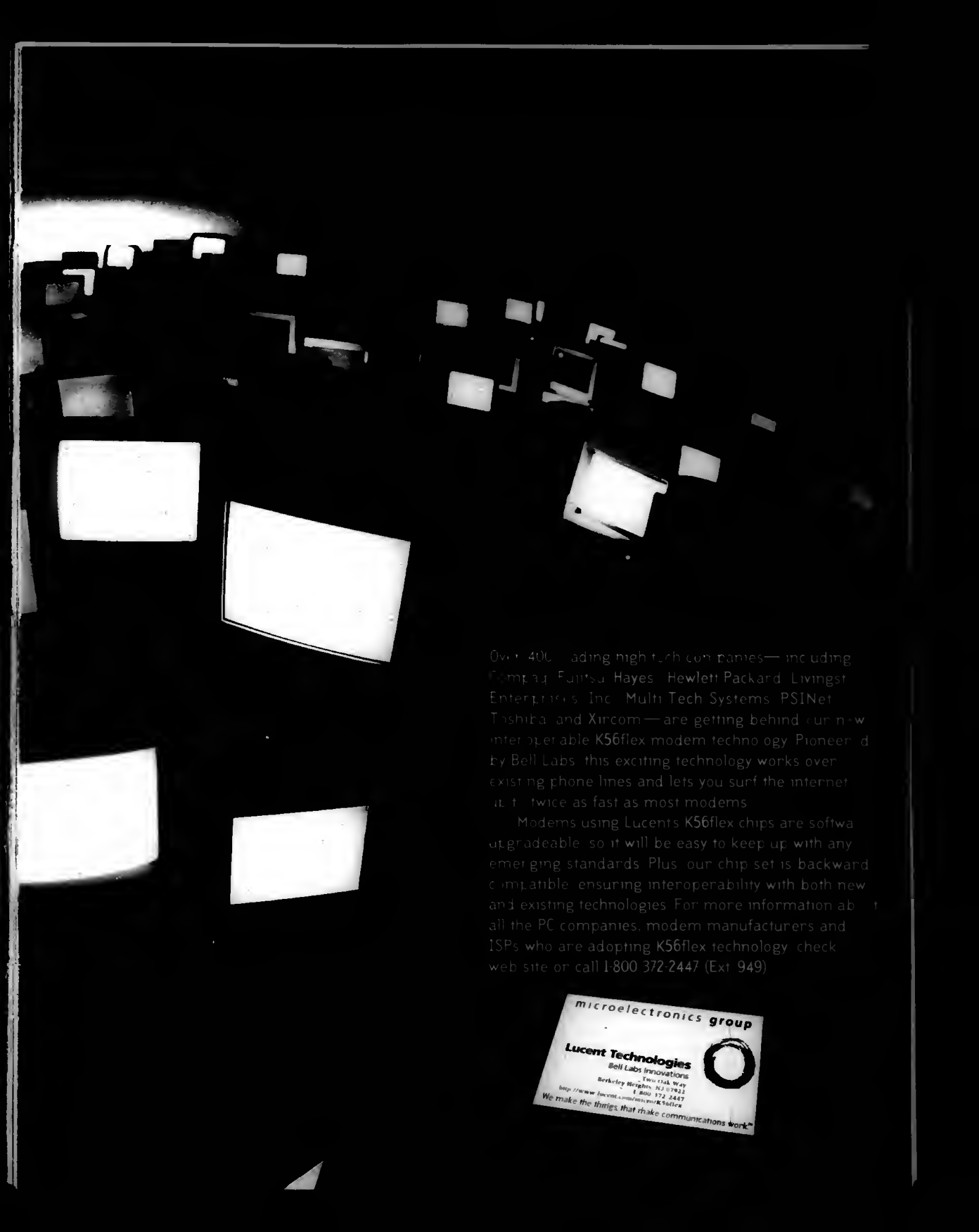

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OPINION

Managers beware

Getting demoted never looked so good. This may be the best of times if you're an IS staffer.

The job market hasn't been this strong since the dawn of the mainframe days with ENIAC.

But if you're an IS manager, the end of the millennium is looking more like the end of the world. The technology management profession is about to begin the toughest years in its history.

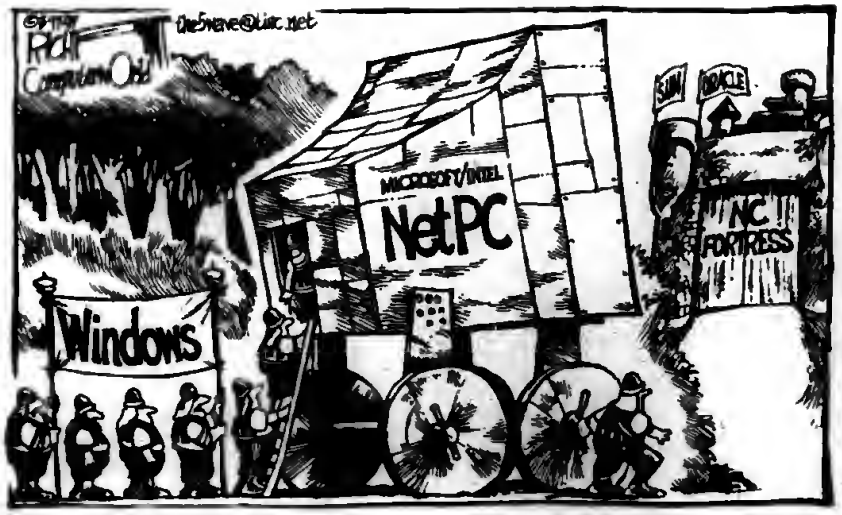
First, your managerial credibility increasingly is being undermined. As columnist Paul Strassmann recently pointed out [CW, March 10], the $600 billion it will supposedly cost to fix year 2000 problems worldwide, combined with the growing realization that IS could save $200 billion per year by better managing PCs, is going to make you look bad. Not your fault? Doesn't matter. Your entire profession is sure take the rap for those huge numbers.

The technology scene is a mess, confronting you with technologies that are powerful and promising yet immature. The Internet is giving you heartburn about everything from development tools to security and scalability. The expectation gap between what users and IS think can be done is vast and growing.

If all of the above doesn't get you, the skills gap will. According to the Information Technology Association of America, 190,000 IT positions sit vacant in user companies because of the shortage of workers. The shortage is even greater if you include government, small companies and nonprofits. Meanwhile, the number of college graduates with math or computer science degrees fell 43% between 1986 and 1994.

Add it all up. Not enough people, technology you can't manage and a financial scandal add up to hard times for IS management. Then again, if you can survive until 2001, you probably can survive anything.

Allan E. Alter, *senior editor, Managing*
Internet: *allan_alter@cw.com*



LETTERS

Who needs race online?

IF THE GOAL of the civil rights movement is to bring society to where race and gender are not considered for matters such as hiring, those who favor civil rights should support Internet recruiting.

Having just read "Who's in the online pool?" [CW, Feb. 10], I have to wonder what the real goals are of those who want to require that employers know the race and gender of potential employees. This is the first time in history that it can be proved an employer made a decision to select a candidate without considering race or gender. Also, the claim that Internet access is biased toward white males is baloney, especially knowing that urban areas are more likely to have a local access number than rural and suburban areas. So when will race and gender no longer matter?

Brian Johnson
Aliquippa, Pa.

Don't dismiss carpal tunnel

PLEASE ADVISE your ill-informed readers [Letters, Jan. 6] that carpal tunnel syndrome can cause irreversible nerve damage without any accompanying pain. Such damage can make many activities in normal life — such as holding on to things without dropping them, opening jars and signing paperwork legibly — difficult or impossible. The first symptom is not pain, but numbness or tingling in the fingers, followed by clumsiness. Anyone who has used a keyboard for many years should get a referral to a qualified neurologist and have the function of the nerves through the carpal tunnel tested.

There is no evidence that any amount of exercise or so-called ergonomic keyboards or furniture can prevent carpal tunnel syndrome. At best, they may delay its onset. Once the nerve sheath is damaged, continued stress to the nerve can cause permanent and irreversible damage. There is no correlation between the extent of damage and reported pain. In fact, many carpal tunnel syndrome sufferers never have felt any pain.

Suzanne Stoll
Juneau, Alaska

Cyberfolks have rights, too

THE COMMENTARY by David Coursey in your Feb. 10 issue ["Where everybody knows your name"] left me astonished. This fear of the Web's supposed anonymity totally ignores reality outside the Web or perhaps hints that privacy as a whole is dangerous.

I can use a pay phone anonymously to make an obscene phone call, lure children to God-knows-what, order a bale of pot or pull a marketing scam. Should we all enter a personal identification number before we can use a pay phone and have the phone company keep a detailed log of whom we call and when? I can send unsolicited pornography or a mail bomb with a fake or no return address via regular mail. Should we have to go to the post office to get each piece of mail stamped with a bar code and entered into a database? Why not tattoo bar codes on our foreheads so the police can scan us as we move about?

Mr. Coursey, this is still America.

Mr. Coursey, this is still America, and we still have the Constitution. You can read it online — anonymously, so you won't be embarrassed to be found reading something you must have missed in high school.

Alex Törralbas
New York

Windows CE a good start

DAVID COURSEY'S column on Windows CE and the Casio Cassiopeia handheld personal computer (HPC) was a glancing blow ["It makes me WinCE," CW, Feb. 3]. Coursey focused his complaints almost entirely on form rather than function. He failed to realize the HPC design is probably not targeted at someone who shares his dream of "a small, wireless, E-mail device that is easy to type on, can do simple editing tasks and can run spreadsheets."

The Cassiopeia (which I own) can do all these things, fairly well, at a reasonable price. If Coursey wants a bigger keyboard or a screen with greater resolution, he needs a laptop. Let's give Microsoft and its hardware partners a little while to work out the design flaws. These HPCs are a good first try.

Robin Way
Northwest Natural Gas Co.
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Buyer beware on analyst advice

Efrem G. Mallach

Admit it. You're an advice junkie. Need proof? The industry analyst business rakes in more than $1 billion annually, mostly from IS managers who seek advice on trends, vendors and products. Consultants take in even more for advice tailored to a specific situation.

If you spend that much on advice, you pay attention to it. Vendors know that. So U.S. vendors spend more than $100 million per year to get analysts and consultants in their corner. These efforts don't always work, but they help.

Vendors spend more than $100 million per year to get industry analysts in their corner.

Why do vendors go to this expense? Because some parts of an analyst's advice are objective, but others aren't. It's one thing to say that vendor A's hub supports X ports at Y bit/sec. That's objective. It's another thing to say that vendor B is a technology laggard, or vendor C's strategy is flawed. That's where opinions come into play and where analysts' attitudes toward vendors matter.

What's more, feelings *should* matter. A vendor's treatment of analysts may not mirror its treatment of users precisely, but it's a guide. When vendors give analysts prompt, clear responses to questions, access to experts when needed and truly useful presentations, the analysts will conclude that users are likely to get similar attention. Analysts who get the opposite will conclude the opposite. The logic may not be perfect, but experience can't be denied.

Yet this situation of vendors courting analysts — with varying effectiveness — makes analyst evaluations inherently subjective. What's an IS manager to do?

1. Don't kick the habit. It's OK to need advice. Technology is complex and moves quickly. You can't spend all your time evaluating vendors and technologies. Go to people whose job it is, and pay them for what they know.
2. Remember you're at the end of a long information chain. Everyone in the chain helped shape what you hear. And everyone in the chain has an ax to grind, personal favorites or entrenched dislikes. They put their spin on the elusive "truth."
3. Get multiple analyst perspectives. If you can't subscribe to more than one service, read what others say in the press, pull summaries off World Wide Web sites or exchange views with colleagues.
4. Probe. Only a minority of analyst subscribers take full advantage of their call-in privileges. Join that minority. Find out what assumptions the analysts used, what their methodology was and how they chose the vendors to examine.
5. Be aware that analyst firms receive millions of dollars from vendor clients, too. Although few analysts will "fudge" evaluations to favor clients, they are more likely to know client firms in depth. This makes them more likely to write about clients and more aware of their products' true capabilities.
6. Check the record. What did this firm — or even this particular analyst — say about the vendor, product or technology a year ago? Two years ago? And what really happened? As mutual-fund advertisements say, past performance is no guarantee, but it's another calibration point.
7. Evaluate recommendations in the context of your firm's approach to technology. Is it leading-edge or conservative? Is management centralized or distributed? Does your business stress market share or current profits? The right recommendation for one company profile could be disastrous for another.

That's work. But if you don't do it, your analyst experience could be a bad trip. □

Mallach chairs the MIS program at the University of Massachusetts Lowell. He is CEO of Kensington Group, Inc., which advises vendors on analyst relations. His Internet address is mallache@woods.uml.edu.

Gene-splicing a new IS breed

John Gantz

I agree with Allan Alter. In a column in these pages two weeks ago, he proclaimed the title of CIO passe. We don't need it anymore. We need an entirely new breed of IS professional — a transgenic combination of computer wizard, webmaster, business executive and sales manager.

Cut a slice of Dale Carnegie DNA, splice it with a Nicholas Negroponte gene and plant it all in the chromosomes of a seasoned, 20-year IS management veteran who has gone through at least one major mainframe operating system conversion. Then clone the result as much as needed.

We've passed into a new era of computing.

In the first era, we automated the back office: IS handled the care and feeding of the mainframe, and there were three IS professionals for every computer. Then we began to automate the rest of our company with PCs and LANs. The task became the care and feeding of a burgeoning population of internal end users — about 50 for every IS professional.

Now we are beginning to automate our customer relationships via the World Wide Web and other networked applications.

The new task is the care and feeding — and recruiting — of thousands or millions of customers. It's a new game.

Accomplishing that task will be more like organizing a whole business rather than a support function inside a larger business. IS executives will become vice presidents of online services.

Their performance will be measured in quarterly profits, not IS project milestones.

These new electronic commerce divisions will have marketing departments, sales forces, controllers and maybe even human resources departments.

Someday, maybe you can run this business.

Sound far-fetched? It isn't. Some companies have already turned their online commerce initiatives into full-fledged business units. In most, the IS chief doesn't run the business, but he or she is an integral part of the cross-functional team that does. Everyone on the team worries about sales, marketing and customer satisfaction. The IS professionals are involved in product planning, visiting customers and measuring milestones in product launches, not in application or systems conversions.

There will always be careers for technical specialists. In fact, an industry survey says there will be a long-term shortage of them. But for the first time, I see an IS career path that leads seamlessly to running a business. Technical skills will be necessary, but they will be just one of many critical success factors in that endeavor. Business acumen and salesmanship will be at least as important.

Online sales divisions will require IS executives with salesmanship.

What will surprise us is how fast the demand for this blend of skills will grow. In five years, every major U.S. corporation will be at least experimenting with online customer service, ordering and fulfillment operations.

It's going to take a lot longer than that to develop a crop of IS professionals genetically suited to this new role. How many computer science graduates will go on to get MBAs in the next five years?

So a lot of us will be thrust into that role without a lot of experience, background or predisposition toward it. It will be like waking up one day in a new country. It will be unnerving at first, but after a while we might like the new diet, language and culture. □

Gantz is a senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

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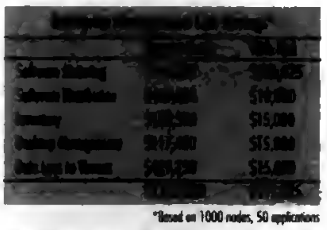

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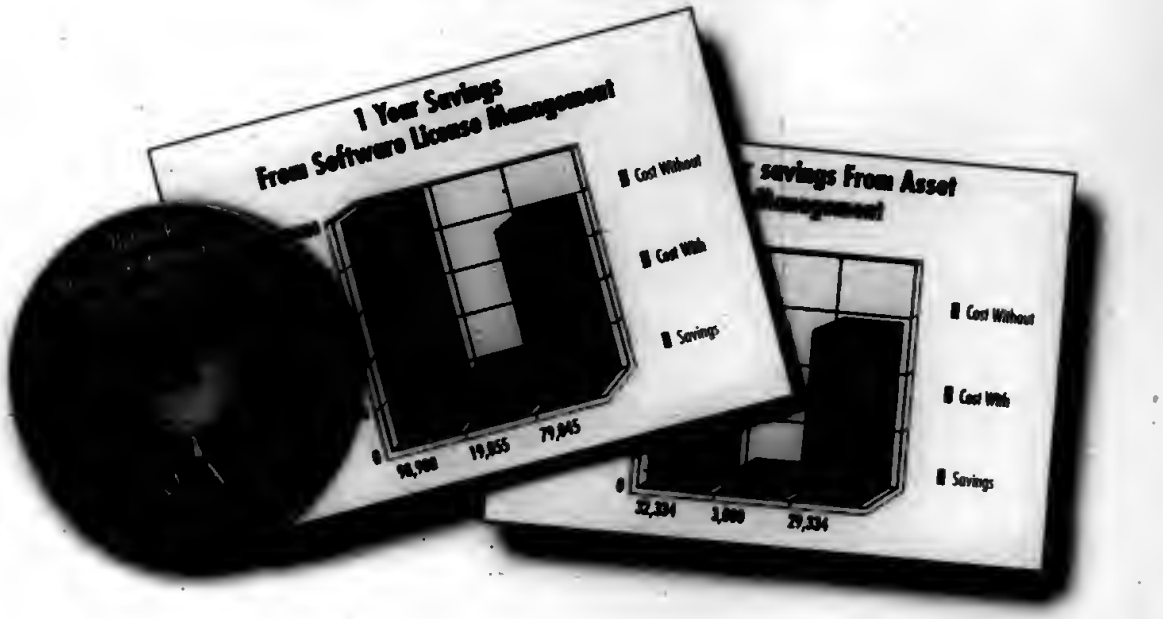

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COMMENTARY

The cosmic questions of IT

DAVID MOSCHELLA

Does anyone really know where computing is headed?

I recently attended ACM97, the 50th anniversary conference of the Association for Computing Machinery, where the topic was "The Next 50 Years of Computing."

Addressing that daunting subject were nine of the world's most accomplished scientists and seven digitally oriented leaders from the business, government, education and art communities.

After two and a half days of sincere and high-minded discussion, it became clear that, in terms of predicting the future, science has its limits.

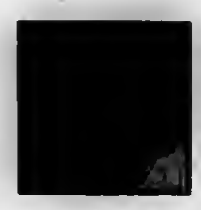
Although just about everyone agreed that in the next 50 years computer processing power, memory, storage and communications bandwidth all will grow between 10,000 and 1 billion times, the meaning of those stunning improvements was decidedly unclear.

THE BINARY TEST

In the end, attendees were left to ponder these alternative future scenarios:

1. Computers will either a) rejuvenate grade school education or b) reduce the need to improve student literacy.
2. Computers will either a) help bridge the gap between rich and poor or b) steadily widen it.
3. Computers will either a) lead to unprecedented individual freedom or b) render us all subject to 24-hour-per-day surveillance.
4. Computers will either a) lead to new and strengthened communities or b) heighten social alienation by creating powerful new virtual worlds and other forms of escapism.
5. Computers will either a) further entrench today's highly specialized job market or b) lead to new demand for interdisciplinary generalists.
6. Computers will either a) lead to unprecedented societal creativity or b) allow bad content to obscure the good in an endless web of mediocrity.
7. Computers will either a) rejuvenate democracy or b) unleash the dangers of mob rule.
8. Computers will either a) sustain Western military superiority or b) rapidly enhance the power of terrorist groups and rogue states.
9. Computers will either a) expand human abilities or b) increasingly replace them.
10. Computers will either a) help us understand our consciousness or b) further distract us from true self-awareness.

Technologists tend to be optimistic, so most of the speakers and the audience came down on the brighter side of most of these questions. Their hopefulness is grounded partly in history but mostly in faith. Certainly, the 20th century provides ample evidence that technology often results in both the fair and the foul.



With the obvious caveat that complex subjects are never binary, following are my own answers: 1. neither; 2. a; 3. both; 4. b; 5. b; 6. a; 7. neither; 8. a; 9. a; and 10. b.

What do you think?

If nothing else, the exercise can stretch the brain a bit. More seriously, because information technology is the industry we have all chosen to work in, it's hard to avoid accepting at least some responsibility for our technology's long-term consequences.

If people in our business don't know or care what sort of world we're creating, who does? □

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.

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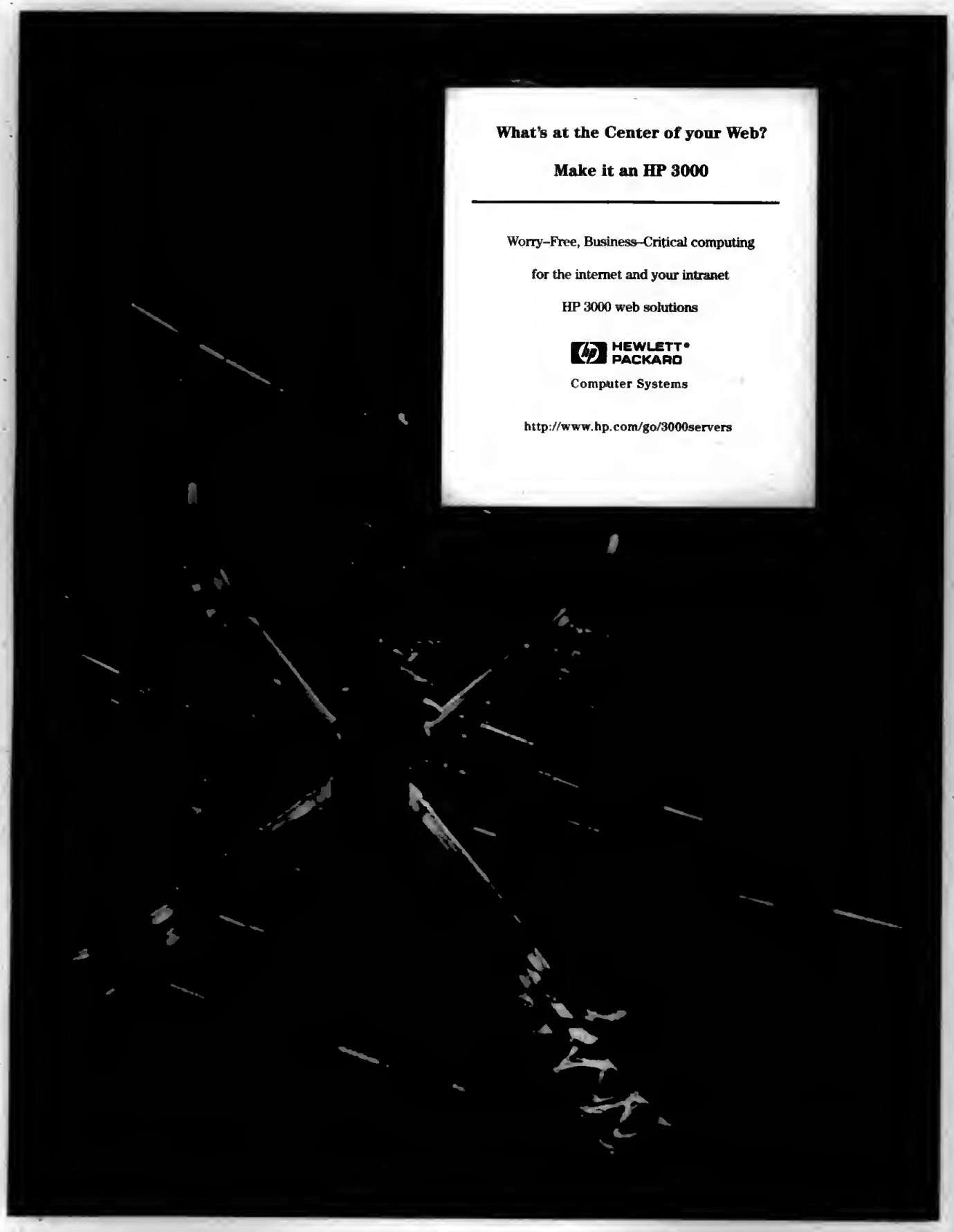
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Briefs

Data for everyone, bills for none?

▶ *Recentralized storage is chargeback challenge*

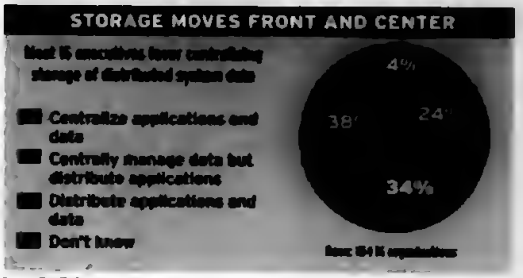
By Tim Ouellette

USERS ARE STARTING to bring their distributed data back to the data center, but many are grappling with how to pay for it.

Disparate business units and departments have bought and installed their own servers and storage devices over the years. But the move back toward data centralization doesn't clearly define how companies should budget for data that is used in one or more departments but housed and managed by the information systems department.

For example, Westinghouse Electric Corp. in Pittsburgh has installed IBM's Adstar Distributed Storage Management package to back up and manage data for its offices nationwide.

"We are thinking of a chargeback strategy for these services," said Kristie Reid, a senior systems engineer at Westinghouse, during the recent Share user conference in San Francisco. "Right now, the service is free."



Source: Find/SVP, Inc., New York

NOT SO EASY

Although charging separate departments for their computer use has been common as companies decentralized computer operations, it was a lot easier than recentralizing storage needs only.

"The way that chargeback used to happen was users assigned the cost of entire systems to the business units because the units bought the server [and storage] themselves," said John McArthur, an analyst at International Data Corp. in Framingham, Mass.

"Now [storage] numbers are a lot bigger when centralizing," so the issue has become more complex, McArthur said.

The move to the center is expected to continue. As the cost of managing distributed systems rises, more users are looking to data center managers for their expertise in handling high-volume data systems.

Recentralized data, page 46

Prices press PC servers

The PC server market this year will experience many of the same pricing pains that previously hit the PC desktop market and cut in to what were once profitable havens, according to a report from International Data Corp. (IDC)

The Framingham, Mass., research firm said the server market has entered a new phase of pricing turmoil at the low end.

At the same time, vendors are branching out in new directions. IDC predicted there will be a lot of activity early this year. Intel will once again decrease its processor prices, IDC said. That will usher in a round of cuts as server vendors vie for pricing leadership. IDC said Pentium Pro shipments will continue to grow, which will force vendors to sell Pentium-based servers at "inventory-clearing prices." Vendors will need to stay on top of pricing at the low end to remain competitive while they maintain at least "one-two" performance, according to IDC. — Ed Cone, IDG News Service, Boston bureau

HANDHELD COMPUTERS

PalmPilot upgrades try to invade Win CE turf

By Mindy Blodgett

U.S. ROBOTICS CORP. has upgraded its PalmPilot personal digital assistant by adding electronic-mail capabilities and TCP/IP support for Internet access.

Industry observers said the upgrades mean the PalmPilot, which was introduced a little more than a year ago, will be better able to compete with the handheld computers that run Microsoft Corp.'s Windows CE operating system.

But that isn't a sure thing. Microsoft, in Redmond, Wash., last week announced it will institute a licensing program aimed at expanding the availability of its Windows CE operating system for portable devices.

Microsoft officials said they hope the new program will lead to the development of other devices that use Windows CE — such as smart phones — in addition to the handhelds already on the market.

Microsoft is making Windows CE available so OEMs can embed the operating system in portable devices.

U.S. Robotics in Skokie, Ill., last week announced the release of the PalmPilot Professional and the PalmPilot Personal, two second-generation models of its Pilot organizer.

Both devices now offer expense management software, a backlit screen and enhanced personal information software applications such as Microsoft's Schedule and Lotus Development Corp.'s Organizer.

The PalmPilot Professional also offers E-mail connectivity and can synchronize data over TCP/IP networks or remotely via a portable wired modem.

But Timothy Schmidt, an analyst at Encore Consulting Group, Inc. in Longwood, Fla., said that although the new Pilot models feature some interesting applications, the Windows CE-based handheld computers offer more to users.

They feature extra applications and better connectivity to the desktop, Schmidt said.

"The Pilot is good for jotting [down] single names and addresses and short memos," Schmidt said. "But I'm not sure users are really looking for features like electronic mail. For those users, the [handheld computers] are better, with key-

PalmPilot, page 46

HANDHELD HELPER

The PalmPilot Professional and PalmPilot Personal organizers feature:

- **New expense management software and backlit screen**
- **E-mail connectivity and data synchronization over TCP/IP networks (PalmPilot Professional)**
- **512K bytes of memory (PalmPilot Personal)**

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Adstar adds support

IBM's Storage Systems division in San Jose, Calif., this month will add support for Sun Microsystems, Inc. and Hewlett-Packard Co. Unix servers to its backup software package. Adstar Distributed Storage Manager (ADSM) 2.6 includes: disaster recovery capabilities, support for administrator retrieval and restoration of files and support for ADSM's optional hierarchical storage management module.

Ricoh CD-Recorder

Ricoh Corp. in San Jose, Calif., said it will ship a CD-Recorder that can be re-recorded up to 1,000 times. The ReWriteable CD recorder has a SCSI-2 interface and will use standard recordable and rewritable discs. It will ship next month at $599.

HP unveils Vectras

Hewlett-Packard in Palo Alto, Calif., has announced new models of its commercial and high-end HP Vectra PCs. Pricing for the Pentium-based HP Vectra XA PCs ranges from $1,759 for 166-MHz models to $2,779 for 200-MHz MMX-based models. Pricing for the Pentium Pro-based HP Vectra XA PCs ranges from about $2,624 to $3,583.

Third-party storage

Decision Data, Inc. in Horsham, Pa., has announced the 9800 DASD Disk Subsystem, a storage system for IBM AS/400 midrange computers. Each 9800 subsystem can be configured for system mirroring, RAID Level 0 or Level 5 support and up to 33.6G bytes of storage. The system costs between $21,000 and $32,520. It is available now.

Clariion targets telcos

Clariion, a division of Data General Corp. in Westboro, Mass., has introduced storage systems for the telecommunications industry. The TeleStor Disk Array can provide storage for paging, multimedia, voice messaging systems and billing. It will be available this month. Pricing will range from $31,000 to $37,000.

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Recentralized data, page 46

STORAGE MOVES FRONT AND CENTER

Most IS executives favor centralizing storage of distributed system data

- Centralize applications and data
- Centrally manage data but distribute applications
- Distribute applications and data
- Don't know

Base: 154 IS organizations

Source: Forrest/SVP Inc., New York

Prices press PC servers

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*$199 is the manufacturer's suggested retail price for 32MB of most desktop memory as of the date of publication, actual dealer prices may vary. Prices on ECC, parity, server, workstation, DIMM, and other specialty memory may vary. Portable memory is excluded from offer. Promotion starts February 24, 1997, and extends to May 31, 1997, or while supplies last. This promotion subject to change or termination by Kingston Technology Company at any time. Offer valid in the U.S. and Canada only. Pricing in U.S. dollars. Void where prohibited by law. Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708, (714) 435-2600, Fax (714) 435-2699. © 1997 Kingston Technology Company. All rights reserved. Computing Without Limits is a trademark of Kingston Technology Company. Microsoft is a registered trademark of Microsoft Corporation.

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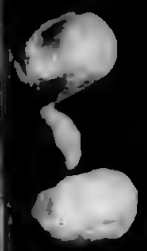

A memory promotion may not seem like a big thing. Then again, you've probably never seen a promotion like this before. Thanks to Microsoft® and Kingston,® users of Microsoft software are headed for the next level of computing with a special opportunity to get 32MB of Kingston memory for only $199.* With more memory, you'll be ready for all kinds of possibilities. Soon, software will allow your PC to talk, listen, even learn from you while you work. So it becomes an intelligent, intuitive partner. You could find yourself retrieving information from the Internet at light speed. Browsing interactive malls. Or playing 3D games that possess the texture and richness of reality. Whatever you do, memory is the magic that makes it all happen.

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of Kingston memory
$199 *MSRP for most desktop systems*

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To place your memory order, call your preferred reseller; or call us toll-free at (888) 435-5451.

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Recentralized data is chargeback challenge

CONTINUED FROM PAGE 43

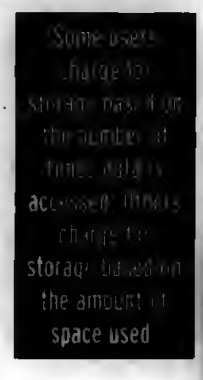
In fact, recent surveys show most large sites are determined to recentralize to some degree (see chart, page 43).

Users are trying different methods to get the job done.

CHARGE OPTIONS

Some users charge based on the number of times data is accessed. Others base their charges on the amount of storage space used.

For example, one user, who asked to remain anonymous, said his insurance firm was charging back for tape I/O usage.


Some users charge for storage based on the number of times data is accessed. Others charge for storage based on the amount of space used

But the issue was confused by the use of hierarchical storage management software that migrated some disk files to tape.

"Should users of tape be the fall guys for the people using disk [with tape backups]?" the user asked.

"We started asking ourselves, wouldn't it be better to charge back for the use of the space and eliminate or reduce the I/O charge?" the insurance company user said.

OTHER CONCERNS

Another user at a large metals manufacturer said his firm charges only for disk space used.

That has encouraged users to move less-important data to low-cost tape storage, which doesn't affect their departmental budgets and in the long run saves the company money.

But paying for additional space is never just about buying more disk or tape space. Users also have to worry about adding data channels, filling slots in existing machines and buying additional high-speed system memory, said John Webster, an analyst at The Yankee Group, a research firm in Boston.

Some users just make it simple and put all their storage expenses under the IS department's budget.

"We do have chargeback, but resources are charged to IS as part of technical overhead. It is considered a cost of doing business," said Jeff Koeberl, a systems coordinator at Northwestern Mutual Life Insurance Co. in St. Paul, Minn.

"That's because our first responsibility is disaster recovery, so tapes, CPU time and network bandwidth all get charged to storage management," Koeberl said. □

PalmPilot seeks duel with Win CE

CONTINUED FROM PAGE 43

boards and bigger screens."

But users said they like the PalmPilot's size and its handwriting recognition capabilities.

John Asaro, a sales representative at MCI Communications Corp. in New York, said he uses the device's data synchronization capabilities to update sales meeting information.

"And I would love to have short E-mail on the Pilot," Asaro said. "That would really help me when I'm on the road."

The PalmPilot Professional includes E-mail software and costs $399. The PalmPilot Personal features expense management software and a backlit screen. It costs $299. Both models are available now. □

Clients Agree, Op
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"Our 400+ user client/server OpenIngres application runs our entire business, yet only requires as little as five hours a week to manage — that's incredible!"
Dr. Michael Meyer
Database Administrator
Honeywell MICRO SWITCH Division

host OpenIngres as its single DBMS because it is the most flexible, reliable and easiest to manage."

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That's because performance and manageability are designed into the OpenIngres system from the ground up. Visual DBA, the graphical "control center" for all aspects of OpenIngres database administration, lets you manage, tune and configure the database with point-and-click, drag-and-drop facilities. Features such as rule-based configuration mean that OpenIngres is not only easily and highly configurable, but, more importantly, it doesn't require an army of consultants to tune it.

OpenIngres gives you the ultimate flexibility in customizing your backup strategy. While users continue working, online backups of entire databases or even a single table maximize uptime and data availability.

OpenIngres gives you all the facilities you need for distributed environments. Its transparent access to other corporate data sources, such as DB2, CA-Datacom® and CA-IDMS®, as well as industry leading replication, mean full enterprise wide access to data, anytime, any-

NEW PRODUCTS

ELECTRONIC SPECIALISTS, INC. has announced a redesign of the PDS-11 modem protection device to accommodate X2 56K bit/sec. modems.

According to the Natick, Mass., company, the product was designed to provide four-stage spike suppression and radio frequency interference filtering to support reliable data transmission through modems. The PDS-11 device costs $74.

Electronic Specialists
(508) 655-1532
www.elect-spec.com

CAMI RESEARCH, INC. has announced Connector Protector/EMI, a cable connector insert that was designed to provide suppression of environmental electromagnetic interference.

According to the Lexington, Mass., company, the product is the size of a miniature gender-changer and connects with screws.

An internal ferrite element reduces high-frequency electromagnetic interference.

Pricing starts at $5.27 per connector in quantities of 25.

Cami Research
(617) 860-9137
www.camiresearch.com

INTEL CORP. has announced Netport Express PRO/100, an external print server.

According to the Santa Clara, Calif., company, the single-port product will let workgroups connect a single, parallel printer directly to an Ethernet network running at 10M or 100M bit/sec.

Netport Express PRO/100 costs $399.

Intel
(503) 264-7354
www.intel.com

OKIDATA CORP. has announced Okipage 16N, a 16 page/min. laser printer.

According to the Mount Laurel, N.J., company, Okipage 16N delivers 600 dot/in. image quality. It is powered by a RISC-based microprocessor.

Okipage 16N costs $1,299.

Okidata
(609) 235-2600
www.okidata.com

ARCOM CONTROL SYSTEMS, INC. has released three PCbus digital I/O expansion boards designed for industrial PC or instrumentation applications.

According to the Kansas City, Mo., company, the PCI08, the PCRelay8/IN8 and the PCIB32 all come with device drivers.

All functions are implemented on half-length or small-board sizes, and they provide up to 32 programmable digital I/O lines.

The boards cost between $128 and $192.

Arcom Control Systems
(816) 941-7025
www.arcom.co.uk

ACCES I/O PRODUCTS, INC. has announced Model LTRC-AT, an IBM-compatible, two-card bus expansion kit.

According to the San Diego company, the product allows IBM AT-bus expansion between a host computer and separate expansion chassis without timing or noise problems.

The kit is useful in circuit-board test applications and lets users power-cycle the connected expansion chassis without having to reboot the host PC.

The kit costs $590.

Acces I/O Products
(800) 326-1649
www.acces-usa.com

IMPERIAL TECHNOLOGY, INC. has announced MegaRam-VA Veritas, an accelerator to Veritas Software Corp.'s file system and volume manager.

According to the El Segundo, Calif., company, the accelerator increases throughput on redundant disk arrays at RAID Level 5 and reduces I/O time.

Pricing starts at $6,250.

Imperial Technology
(800) 451-0666
www.imperialtech.com

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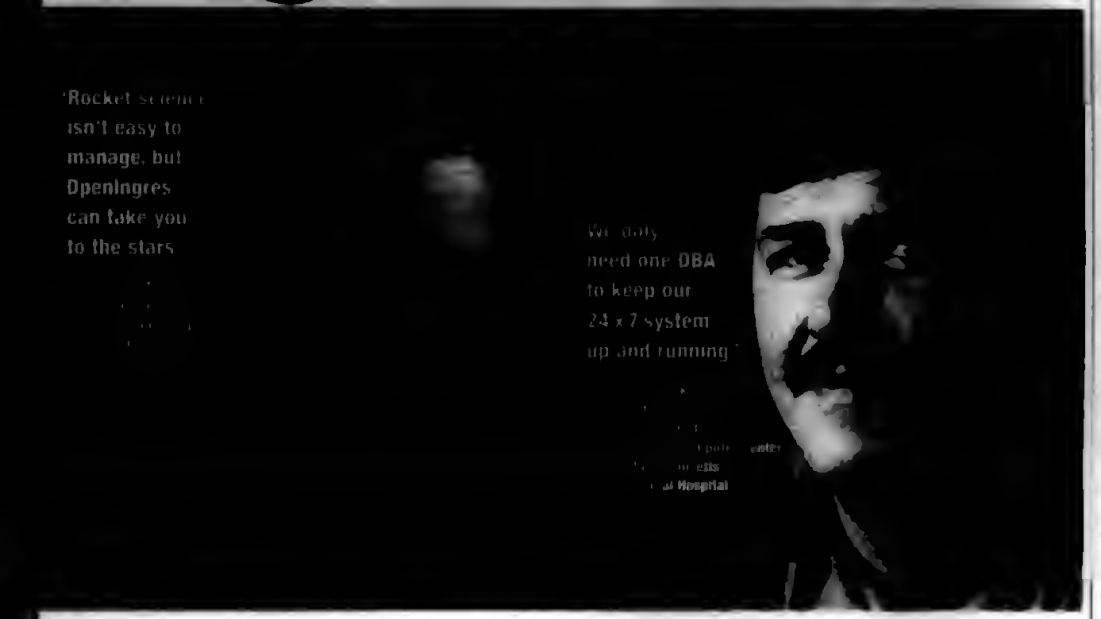

where. OpenIngres is also fully Internet Commerce Enabled™ with an embedded web server and connectivity to all web browsers

Applications developed on OpenIngres deliver the mission-critical reliability and performance that your users demand. And these applications can be deployed without changes in any of the environments in which OpenIngres operates, including Windows NT, UNIX and OpenVMS.

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The Society for Information Management (SIM) *and* COMPUTERWORLD *present:*

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EXECUTIVE TECHNOLOGY SUMMIT'97

May 19 - 21, 1997
The Pointe Hilton Resort at Squaw Peak
Phoenix, Arizona

As we approach the year 2000, business is being irrevocably changed. Whole industries are being reshaped by the forces of increased customer expectations and dramatically shortened time to market cycles. This raises the question, "How can I increase my yield from my IT investments?"

The fourth annual Executive Technology Summit is being presented by SIM and Computerworld, to offer attendees more insight into the ever changing world of information technology. This unique program includes: keynote presentations, where IT visionaries offer first-hand accounts of technology solutions; technology panels, where CIOs are queried by highly respected industry analysts, consultants and editors; technology provider strategy panels, offering perspectives from sponsoring companies' CEOs or CTOs; and Solution Labs, where leading suppliers share their IT expertise.

Powerful Keynote Sessions

John Cross
British Petroleum

John Singel
Price Waterhouse

Naomi Seligman
Research Board

Joe Rosen
Enterprise Technology Corp.

Kicking off ETS '97 is John Cross, General Manager of IT for British Petroleum PLC. Cross discusses the "Transformation of the IT Function at British Petroleum" as they moved from a mainframe VMS environment to client/server. A special Integrator keynote has been added to the program this year, featuring John Singel, Global Information Technology Domain Leader of Price Warehouse. A special strategic measurement keynote has been added to the program and will be given by Joe Rosen, Managing Director, Enterprise Technology Corporation. The closing keynote is provided by Naomi Seligman, Senior Partner of The Research Board, who covers some of the data collected by her exclusive organization.

Technology Provider Strategy Panels

Here is your chance to hear from a senior level IT executive from an ETS sponsor company in a moderated panel format. Corporate strategies and future directions are revealed, as well as answers to questions about new technologies and emerging trends. Hear their stories and learn what you need to know about these companies in order to make beneficial IT investments.

Technology Panels

The following three, 60-minute case-study panels discuss technology applications and implementation, including performance expectations, scope, process and return on investment.

Distributed Computing

Monday, May 19, 1997

Moderated by: Alan Alper
Editor, Magazines Group
Computerworld

The effective use of distributed computing technology raises new challenges for the IT executive. The following issues will be discussed to help you separate promises from reality and to effectively estimate the impact on your resources:

- migration of existing systems
- increased need for object-oriented development
- systems management procedures
- user file management and related fundamental security issues
- adequate hardware and software componentry
- language standards and interoperability

Data Mining and DataWarehousing

Tuesday, May 20, 1997

Moderated by: Alan Paller
Director, Research and Education
Data Warehousing Institute

Many issues plague the IT executive attempting to implement a successful data warehousing or data solution for their enterprise. Here's your opportunity to get the answers to the following questions:

- what kind of infrastructure is necessary to support the amount of data that will be stored and processed?
- do I need a relational database or coulti-dimensional database?
- what set of tools will most appropriately support end-user needs?
- should analysis happen on the desktop or on the server and who has what level of access?
- search engine, text retrieval engine and sort processesing options

Doing Business with Internet Technologies

Wednesday, May 21, 1997

Moderated by: Gay Sleninger
Vice President
Giga Information Group

What are the viable solutions, the costs and the expected return from the corporate business perspective when doing business with Internet technologies? This is your opportunity to discuss solutions on:

- choice of architecture
- security and standards issues
- capitalization of the Internet for intranet purposes
- infrastructure support issues
- planning for effective use of the Internet beyond the year 2000

Solution Labs

See for yourself, the latest technology solutions from today's top IT vendors. Leading suppliers share their vision and expertise. In these small, highly interactive educational forums, explore specific solutions to the issues facing you and your organization.

Once again, this year's ETS conference will be hosted by our Master of Ceremonies, Scott Shuster, Founding Editorial Director, *Business Week* Conference Programs.

Come meet and visit with the following ETS '97 Sponsors:

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IT Investments

The 1997 Executive Technology Summit

EXECUTIVE TECHNOLOGY SUMMIT Registration & Hotel Request
The Pointe Hilton Resort at Squaw Peak, May 19-21, 1997

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$ Your Annualized IT Budget | $ Personal Purchasing Authority | Number of Employees Within Your IT Organization
(This information will not be attributed to you or your company)

Registration Deadline April 18th

To register for ETS '97 fax this form to (312) 245-1081

For more information call 1-800-464-0061 today! Or visit our web site at www.sinnet.org.

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- ❑ SIM Individual Member $760
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  - ❑ Additional SIM Enterprise or Enterprise Plus Member $540 each
- ❑ SIM Academic Institution Member $740
- ❑ Non-Member $895
- ❑ SIM Individual Membership and ETS Registration $950*

** Become an Individual Member of SIM for 1997 and register for the Executive Technology Summit, a $1,145 value!*

PAYMENT:
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Signature | Date

Card Number | Expiration Date

All registration fees include meeting materials, continental breakfasts, lunches and coffee breaks.

It is important to us that you enjoy the Executive Technology Summit. If, due to a physical challenge, you have any special needs, accommodations or requirements, please let us know in the space provided below and we will do our best to accommodate your needs.

HOTEL RESERVATIONS:
The Pointe Hilton Resort at Squaw Peak is the host hotel.

Type of Room Required: ❑ Single ❑ Double ❑ No hotel reservation is needed

Arrival Date | Departure Date

Sharing Room with | Special Room Requests

Hotel reservations must be made prior to April 18, 1997. Space is limited and is on a first-come, first-served basis. Credit card information must be provided in order to secure a hotel reservation.

Signature | Date

Card Number | Expiration Date

The room rate is $145 per night single or double occupancy, plus tax.

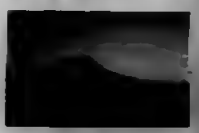
TRAVEL:
Call Flying Colors at (800) 464-0061 for discounted airfare information to ETS '97.
Conference registration and hotel reservations will be confirmed via fax by Flying Colors.

Three easy ways to register...
1. By Mail: Return this form with payment to Executive Technology Summit, P.O. Box 809222, Chicago, IL 60680-9222;
2. By Phone (credit card only): Contact Flying Colors, (800) 464-0061;
3. By Fax (credit card only): Fax form to (312) 245-1081.

No refunds will be issued after May 9, 1997

GOLF TOURNAMENT:
❑ Yes, I want to play in the SAS Institute sponsored golf tournament. My golf handicap is _____

SAS Institute's Summit Golf Tournament



Wednesday, May 21
1:00 - 6:00 p.m.
Pointe Golf Club on Lookout Mountain

Bring your clubs and join your colleagues for an 18-hole team "scramble" format golf tournament, *compliments of SAS Institute* — a great way to wrap-up ETS. Space is limited and pre-registration is required.

Fill out the necessary information on the attached registration form.

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CW 3/17

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Software

Client/Server • Development • Operating Systems

Briefs

1996 estimated worldwide database server market share, by platform

Total revenue: $3.5B

Unix
Windows NT
NetWare
OS/2

Apple to revamp Mac printing

By Lisa Picarille

APPLE COMPUTER, INC. announced it will create a unified printing architecture in future releases of its Mac OS, a move designed to ease users' confusion over multiple printing schemes.

Under the plan, users won't have to decide between installing the print drivers for Apple's QuickDraw GX or the "classic" print manager driver. Instead, the classic print drivers — those that are standard for output devices such as the LaserWriter and StyleWriter — will be part of the Mac OS release that is due in July and code-named Tempo.

Cupertino, Calif.-based Apple plans to remove the QuickDraw GX drivers and extensions from the printing architecture. QuickDraw GX will be repositioned as an installable module for graphics users.

QuickDraw GX was added to the Mac OS in 1993 as an extension to the QuickDraw graphics display system that provided additional color, graphics, text and printing capabilities.

One analyst said the move to a single print architecture is based on QuickDraw GX's inability to take hold with Apple's core publishing and graphics

Apple, page 54

Java packages make coding easier but miss opportunities

REVIEW ▶ *Java development environments*

By Frank Hayes

WHAT COULD BE better than free?

That was the question Symantec Corp., Microsoft Corp. and SunSoft, Inc. faced in creating development environments for Sun Microsystems, Inc.'s Java language. After all, Sun's JavaSoft unit gives away its Java Development Kit (JDK), which includes tools for compiling and testing Java applets and applications.

But Symantec's Cafe 1.5, Microsoft's Visual J++ 1.0 and SunSoft's Java WorkShop 1.0 compete via features such as integrated development environments for coding and testing, commercial-grade debuggers for chasing down errors and strong support for serious development projects.

This first wave of Java development environments isn't perfect. But for less than $100 — along with the advantages of modern development tool sets — these Java packages are a lot better than what is available for free to corporate developers.

Still, each package is a study in missed opportunity. Cafe includes a drag-and-drop graphical user interface (GUI) builder, but it suffers from a cluttered and confusing appearance.

Missed opportunities, page 56

Product development systems such as this one from Adra can be accessed through a Web browser

Design tools bring Web back to roots

By Randy Weston

PRODUCT DATA management (PDM) software vendors are returning the Internet to its roots with offerings that deliver engineering product development data through a World Wide Web browser.

The Internet was originally designed as a means for engineers and academics to share data. The new Web-based PDM products give even casual users within a company access to product data.

"This is incredibly important for the PDM industry," said Ed Miller, an analyst at CIMdata, Inc. in Ann Arbor, Mich. "This is one of the major opportunities we have had in the industry to spread the value of PDM to the masses in the company."

Miller said product data — the bits and pieces of complex information used to design and build a new product — typically is restricted for use within an engineering department. But more users in a company need access to the information — from the sales force to marketing people to plant maintenance engineers, he said.

The nature of PDM technology hampered efforts to meet that need. The technology historically was expensive, took a long time to implement and was difficult to distribute to users because of its complexity. Those factors often meant companies waited a long time before realizing a return on

Design tools, page 54

VOICE RECOGNITION

Tool aims to make software listen

By Sharon Gaudin

CHANT, INC. has released a tool that will let developers build voice-activation technology right in to an application.

Voice activation isn't a new concept, but embedding it in an application instead of directly onto the metal of the hardware is. "No one ever put the technology into the software, because, before Pentiums, the processors simply weren't fast enough to handle it," said John Earle, president of Los Angeles-based Chant, which just released SpeechKit for Windows 95.

Earle said the voice-activation component can be dropped into a database interface, for example. That would let the end user orally ask for all the blue cars in Maine instead of filling out a query form. "By adding this

Tool, page 54

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FRANKLY SPEAKING

Year 2000 won't hit just mainframes

FRANK HAYES

Yes, you *do* have year 2000 problems. And it's going to take your whole organization just to *start* straightening them out.

Somehow, a lot of otherwise sensible IS professionals have acquired the idea that only mainframe databases and Cobol code will be affected when 1999 rolls over into 2000.

I don't know why. Maybe it's because so much ink has been spilled in *Computerworld* and other publications about mission-critical mainframe applications and databases that use only two digits to store the year.

Or maybe it's that most year 2000 products are for finding and fixing Cobol routines whose arithmetic will crater when the mainframe tries to subtract one year from another and gets a negative number.

Or maybe it's that old religious war between PC lovers who think mainframes are falling apart and mainframe bigots who believe PCs are too little and toylike to have real problems.

Who cares why? It comes down to this: The year 2000 problem is a database problem. It doesn't matter whether the database is on a mainframe, a minicomputer, a server or a PC. If you've got databases, and those databases store dates, you've got a year 2000 problem.

How tough is it to root out every potential year 2000 issue? Before you know you're safe, you'll have to check every database in your organization. And that means you'll have to *find* every database in your organization.

Not just the obvious ones, such as your accounting and payroll systems, or even departmental databases. PCs make it easy to include a database in an application — and you've got to track down every one.

That's right — all those little PC productivity applications scattered throughout your organization pose a year 2000 risk. Every E-mail client, every shareware date book, every public-domain calendar — you've got to find them all and make sure they're clear of year 2000 problems.

And you need to chase down nondatabase PC programs, too, such as batch scripts that automatically back up or delete files based on the date.

Suddenly the year 2000 problem doesn't look so manageable, does it? Your carefully crafted plan to repair aging mainframe Cobol is crucial, but it isn't enough to prevent catastrophe 1,020 days from now. And your IS shop hasn't got the money, the people or the time to find every PC program that could disrupt your business with year 2000 problems.

That's where the entire organization comes in. You may not be able to find all your year 2000 problems — but your users can. Those people know your systems even better than you do. They know how the business really operates and where all those personal databases are hidden.

Mobilize those users! Explain the risk, then start them looking for potential problems today. Forget about slapping them down for using those shareware utilities against policy — you don't have time for storm-trooper tactics. Right now, you need all the cooperation you can get.

If each of your users takes personal responsibility for hunting down year 2000 problems, then you've got a fighting chance.

If not, then all your mainframe fixes may not be enough when 2000 turns out to be a very unhappy new year. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

Design tools

CONTINUED FROM PAGE 51

their investment, Miller said.

But now, Miller said, Web-based PDM "gives us a mechanism to get the masses involved in product development. For every engineer, there has to be 100 people in an organization who also need to access this kind of information and use it."

Among the companies that offer or are preparing to release PDM products are Adra Systems, Inc. in Chelmsford, Mass.; Structural Dynamics Research Corp. in Milford, Ohio; Sherpa Corp. in Milpitas, Calif.; and IBM in Armonk, N.Y.

Zenith Electronics Corp. is using Adra's system to replace its legacy engineering information systems and integrate the software system for engineering bills of materials into its larger resource planning system.

Engineers and plant personnel at Zenith's manufacturing sites in the U.S. and Mexico have access to blueprint plans of products instantly. The plans previously were faxed or mailed on microfilm from a central repository at Zenith headquarters in Glenview, Ill.

"The strongest demand for this was from the records group because they have to distribute the drawings and microfilm," said Greg Corwin, Zenith's manager of information systems. "Also, people are not working off as clear a resolution as they should be with faxed images."

Corwin also said the drawings are large and must be faxed piecemeal. With the Web-based system, end users can see from their desktops detailed plans that they can print locally. But Corwin said that won't always be necessary.

"Users don't like using paper or microfilm," he said. "They don't like getting out of their chair and walking over to use the microfilm machine. Depending on who you talk to, it takes 15 minutes to four hours to get a manual to print. We are now serving them in a LAN environment through the intranet in five seconds per drawing." □

Apple to revamp Mac printing

CONTINUED FROM PAGE 51

users. Those users favor PostScript, a page-description language from Adobe Systems, Inc. in San Jose, Calif. Apple recently decided to embrace Display PostScript as the imaging model for its forthcoming Rhapsody operating system, due late next year.

"Apple is moving in the direction of being responsible to the marketplace, which has for years rallied around PostScript as its imaging model for output," said Craig Cline, editorial director at Seybold Publications, a group of newsletters based in Foster City, Calif.

SO LONG, GX

One user was happy to see GX go.

"We turn off anything that says GX, because this is a PostScript world — especially in the ad business," said Jon Rasmussen, systems manager at Kuhn & Wittenborn Advertising in Kansas City, Mo., which uses 65 Macintoshes. "The GX features are neat, and the sales pitch is good, but anything that conflicts with PostScript is a nightmare. I think not having the GX printing option will ease users' confusion, increase the stability of the [operating system] and eliminate support problems," he said.

The only applications that will have to be modified under the new effort are about 20 that require QuickDraw GX. Users of those will need to buy updated versions to print under the new architecture.

Commercial and corporate developers with GX-only applications will have to modify their applications to use the new shared library to print via standard classic print drivers. □

Tool aims to make software listen

CONTINUED FROM PAGE 51

component into a program, it will speed computing," he added. "You can say things faster than you can scroll and click."

Most people can indeed speak faster than they type, but not if the spoken word has to be repeated over and over, noted Karen Boucher, director at The Standish Group International, Inc. in Dennis, Mass.

"If it worked the way people expect it to, it would be great," Boucher said of voice-recognition software. "But when you actually try to use it, it's faster to type. You may say, 'Open file,' and then have to say it 10 times for [the software] to understand you. Any slight variation in the way you say it affects whether it will work. If you're in a rush or have a cold, it might not work."

Earle said SpeechKit was designed to handle the accents and fluctuations that make individual voices unique. "The voice engine learns how you say certain sounds by bringing it down to phonetics," he said. "You speak, and the engine takes the sound and creates different mappings of your voice."

Evan Quinn, an analyst at International Data Corp. in Framingham, Mass., said developers are still working the bugs out of voice-recognition technology, but it has great potential. Quinn said it is particularly appropriate to workers who have their hands full, such as air traffic controllers.

"If they can make this work easily, there's great potential there," Quinn said. "Think how much easier it would be if you didn't have to type everything."

SpeechKit is shipping now and costs $495 for a single user. □

NEW PRODUCT

FUNK SOFTWARE, INC. has announced Steel-Belted Radius for NetWare, software to allow network managers to centralize authentication, authorization and accounting for dial-in users.

According to the Cambridge, Mass., company, the software is based on the Remote Authentication Dial-In User Service standard. In addition to the NetWare version, a Windows NT version will be available soon.

Steel-Belted Radius for NetWare costs $4,000.

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REVIEW► *Java development environments*

Missed opportunities in Java

CONTINUED FROM PAGE 51

Visual J++ offers an efficient tool set for writing Java code, but it includes no GUI builder and uses a nonstandard version of Java for testing and debugging. And Java WorkShop's extraordinary ease of use is hobbled by its instability and sluggishness.

HOW I TESTED

To test Cafe, Visual J++ and Java WorkShop on Windows 95, I built a Java applet that lets the user enter a date and returns the corresponding day of the week. The user interface was just complex enough to mimic business-oriented applets that require data entry and on-the-fly screen updates.

I also put the tool sets through their paces by creating the applet iteratively — that is, I ran each section of code as I hacked it out. That wasn't an elegant style of programming, but it matched what many corporate developers will need to do as they feel their way through an unfamiliar new language.

All three environments worked well with this iterative style. Their integrated development environments made it easy to test, debug and change code rapidly.

CAFE 1.5

Symantec Cafe was the first of the three packages to hit the street. It looks and feels much like a typical integrated development environment for C++. Cafe opened a profusion of windows when it first ran, including windows for editing source code, class browsing and debugging. That crowded the screen, and Symantec's custom window borders were harder to read than conventional Windows windows.

Cafe includes an online tutorial, but I didn't find it until I was well under way with my project. The package contains very little printed documentation.

But the menus were straightforward, and I had no difficulty creating a project with the ProjectExpress wizard, which generates project files for either an applet or application, including the skeleton code. The code was relatively spartan and wasn't structured to support complexities such as multithreading.

Cafe's biggest strength was its Cafe Studio tool for building GUIs. Cafe Studio offers a simple drag-and-drop environment for positioning labels, text-entry fields, panels, buttons, check boxes, lists and scroll bars. Each component also got a property sheet, making it easy to code the results of user actions. The source code stayed in sync with the property sheets.

For program logic outside the visual components, Cafe provides a one-click build-and-run menu choice. The compiler stops listing errors at the first fatal error, which encourages developers to fix errors one at a time. As is typical with modern integrated environments, a click on the error message brought the suspect line into view in the source-code editing window.

The debugger supports multiple break points and single-stepping through code, along with the ability to examine values and handle exceptions — again, standard integrated development environment support.

Cafe uses JDK's AppletViewer to run applets while testing. Although it is a standard test bed, the AppletViewer didn't handle all component events properly. I was frustrated by its shortcomings, so I eventually used Netscape Communications Corp.'s Navigator to verify that my test applet worked correctly.

VISUAL J++ 1.0

Microsoft Visual J++, like Cafe, shows its C++ heritage. In fact, the integrated development environment is almost indistinguishable from Visual C++. Instead of a blitz of windows, J++ uses a well-organized series of tabbed screens to build and debug applets and applications.

The J++ wizard offers more flexibility in creating projects than Cafe's wizard, and the skeleton applet it created offered support for multithreading and animation. By default, it also included an advertisement for Visual J++.

Along with an online tutorial, the J++ package includes *Learn Java Now*, a 276-page book by Stephen R. Davis that teaches the Java language and the J++ environment. But I searched in vain for a GUI builder similar to Cafe Studio. The J++ Resource Wizard generated menus and dialog boxes but not other familiar components.

The J++ Type Library Wizard also offers the ability to add non-Java components to an applet — a feature I didn't test. But it is one of J++'s most controversial capabilities, because it makes it easy to lock an applet to a particular platform. However, that ability was clearly segregated, and J++ generated Java-only applets without difficulty.

As expected from its heritage, J++ has solid support for debugging and iterative development. The compiler lists all errors it finds. But clicking on an error sometimes positioned the cursor on the wrong part of a source-code line — apparently because I used tabs instead of spaces.

The compiler's error messages were sometimes obscure. A misplaced comma generated an "Undefined name" message in J++ instead of the "; expected" message that Cafe and Java WorkShop gave.

But the biggest weakness of J++ is its use of Microsoft's Internet Explorer World Wide Web browser for testing applets. Loading Internet Explorer slowed the testing process, and the browser didn't display runtime errors. Explorer's Java implementation — which Microsoft rewrote to improve performance — had a bug that let some applets run that shouldn't have been able to. It also didn't handle all component events properly.

JAVA WORKSHOP 1.0

SunSoft Java WorkShop was unusual in two ways: It was written entirely in Java, and it was designed for assembling complete Web pages instead of just Java applets and applications.

Java WorkShop's clean, uncluttered integrated development environment runs entirely within its own Web browser. Its opening screen points to a tutorial, making WorkShop much more beginner-friendly than Cafe or J++.

But Java WorkShop's friendliness was soon overshadowed by its sluggishness. Scroll bars didn't work as they do in normal Windows applications. Shifting from editor to debugger meant watching icons redraw one at a time. And at least one crash could be verified as having been caused by WorkShop, something neither of the other development environments did.

WorkShop easily generated an applet's skeleton code. However, building, running and debugging all took longer because of WorkShop's sluggish performance.

As with Café, the WorkShop compiler listed only the first fatal error. When I clicked on the error, the suspect source-code line was displayed in large, clear text with a pointer to the error position.

Java WorkShop served as its own test bed for applets and handled all the component events I tried. At least in terms of testing environment, it was the best of the three.

WorkShop also includes a GUI builder called Visual Java. Unlike Cafe Studio, Visual Java generates code that the developer is supposed to subclass to create actual panels. That may be good programming practice, but it made using Visual Java miserably complex for simple projects.

Although WorkShop was written in Java, it runs only on 32-bit Windows and Solaris, Sun's version of Unix.

A future version should run on all Java platforms, according to SunSoft. □

Computerworld staff columnist Hayes has written about programming for 15 years. His Internet address is frank_hayes@cw.com.

JAVA DEVELOPMENT TOOLS

	Cafe 1.5 Symantec Cupertino, Calif. www.symantec.com	Visual J++ 1.0 Microsoft Redmond, Wash. www.microsoft.com	Java WorkShop 1.0 SunSoft Mountain View, Calif. www.sun.com/sunsoft
PLATFORMS SUPPORTED	Windows 95, Windows NT 3.51	Windows 95, Windows NT 3.51, Windows NT 4.0	Windows 95, Windows NT 3.51, Windows NT 4.0, Solaris
INTEGRATED DEVELOPMENT ENVIRONMENT	Multiple on-screen windows	Frames on screen; navigation via tabs	Browser; navigation via icons
NUMBER OF MOUSE CLICKS TO REBUILD PROJECT	1	2	3 to 4
STANDARD ERROR MESSAGES	Yes	No (custom compiler)	Yes
RUNTIME ERROR DISPLAY	Yes	No	Yes
ONLINE UPDATES	Yes	No	No
PRICE	$79.95	$99	$99
OVERALL GRADE	B+	B-	D+

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Briefs

SECURITY BREACHES

79% of businesses, government agencies and universities have lost money due to computer security breaches

Of those losses:
- 10% were caused by insiders
- 14% were theft
- 12% were fraud
- 11% were sabotage
- 8% were system penetration from outside

47% of the organizations surveyed cited their Internet connection as a frequent point of attack, up from 37% last year. But internal systems were still the biggest problem at more than 50% of organizations.

Base: 563 organizations

NETWORK OPERATING SYSTEMS

Novell tools boost NT/ NetWare integration

By Laura DiDio

AFTER A TWO-YEAR wait, Novell, Inc. last week began shipping two Windows NT integration packages for NetWare.

Windows NT Workstation Manager is a software utility that lets businesses manage Windows NT Workstations via Novell Directory Services (NDS).

The second package, Novell Administrator for Windows NT, integrates all users and groups in mixed NetWare/IntranetWare and NT Server networks within NDS so administrators can control user rights from one console. Both components are part of the Orem, Utah, company's ongoing attempt to provide better links to the Windows NT Workstation environment, thereby forestalling user defections to rival Microsoft Corp.'s Windows NT Server platform.

"We just want the [operating systems] to work together"

"Microsoft and Novell are waking up to the fact that users don't care that they compete. Separate is not equal. We just want the [operating systems] to work together," said Scott Rackliffe, vice president of information systems at Farm Credit Financial Partners, Inc. in Agawam, Mass. "Inevitably, each will still try and do an end

Tools, page 65

Newspapers break high-tech ground

By Kim Girard

NEWSPAPERS ACROSS the country are turning to new networking technologies to support increasing numbers of mobile, Internet-craving workers and new applications.

The Boston Globe recently implemented Asynchronous Transfer Mode (ATM) backbone switches and installed frame relay and voice over frame relay in different parts of s network that supports 1,000 computers.

LEADING THE PACK

On the networking front, the *Globe* is probably ahead of the game, analysts said. Daily newspapers, on the whole, drag their

Newspapers, page 62

Domino manages documents

▶ *Lotus' Domino.Doc brings document check-in/checkout, version control to server*

By Barb Cole

LOTUS DEVELOPMENT CORP. is readying software that will add document-management features to its Domino messaging and groupware server.

The server-based software, Domino.Doc, will bring document check-in/checkout and version control to Domino, which makes documents accessible via World Wide Web browsers or Notes clients.

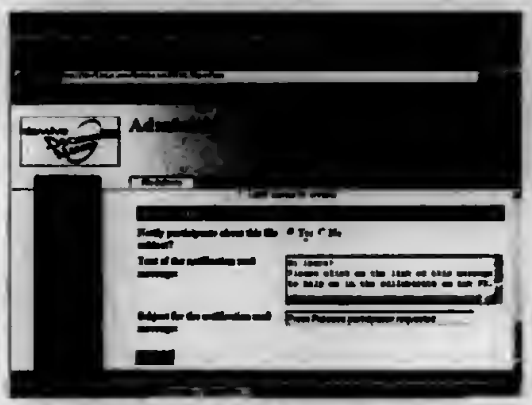
SIMPLER MOVES

Domino users said the product is attractive because it lets information systems departments develop a new breed of document-management application around their existing Notes networks without moving data into a separate server or cultivating new development talent.

"We already have a lot of documents within [Domino]," said Scott Surbrook, a LAN manager at an agricultural company in the South. Domino.Doc will enable the firm to store its procedures and policies — including documentation for the company's computer system — within Domino, Surbrook said. Domino.Doc will let multiple users access those ever-changing documents but will ensure that changes are kept up to date using version control.

Document management is a strong complement to Domi-

Lotus, page 65



Domino.Doc sends electronic-mail invitations asking participants to access its file cabinet to write or collaborate on one or more documents

Xyplex turns up heat on WAN access servers

By Bob Wallace

XYPLEX NETWORKS CORP. users said they are upbeat about the latest turn in what has been a long and winding road for the industry's fourth-largest wide-area network access server maker.

The Littleton, Mass., vendor last week said it is refocusing its efforts on providing users with more affordable and flexible WAN access servers.

The company bought Hughes LAN Systems, Inc. in 1995 with the hope of becoming a major player in switching but found that it couldn't keep pace with the pricing and distribution capabilities of 3Com Corp., Cisco Systems, Inc. and other competitors.

"We watched cautiously as our investment teetered," re-

Xyplex, page 65

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SHORTS

NT firewall debuts

Network-1 Software and Technology, Inc. in New York recently released a firewall security package for Windows NT 3.51 and 4.0 running on Digital Equipment Corp. 433- and 500-MHz Alpha-based systems. It simultaneously filters traffic for applications and network protocols to protect Internet and intranet data. It costs $27,500 on a 433-MHz Alpha Windows NT system and $30,000 on a 500-MHz Alpha Windows NT system.

NT/Unix integration

WRQ, Inc. in Seattle recently introduced a Unix/Windows NT integration package. Called Reflection NFS Connection for Windows NT Version 6.1, the software lets Windows NT users access file and print resources on Unix networks. The product makes the Unix resources available in Windows Explorer and requires no Unix training or commands. It will ship in May at a price of $199 for the first 60 days. After that, it will cost $219.

Network faxing

American International Facsimile Products Corp. in Portland, Ore., has released a package that provides users with LAN and Internet fax capabilities. The package includes the Host-Fax for NT, for high-volume fax services to mainframe, midrange and LAN applications, and InternetLink, for document delivery over the Internet. Pricing for Host-Fax for NT begins at $5,995. InternetLink costs $5,995.

Newspapers

CONTINUED FROM PAGE 59

feet on networking technology, fearful that they will foul up production with a new system, said James Iobst, director of advanced computer science at the Newspaper Association of America in Vienna, Va.

And, for now, most papers are sinking cash into electronic publishing efforts rather than experimenting with new and expensive technology such as ATM, Iobst said.

SYSTEMS MANAGEMENT

SWITCH TO ATM

Among the exceptions is *The New York Times*, the *Globe*'s parent company, which installed ATM backbone switches about a year ago. About 20 sites are connected on the company's network by frame-relay circuits, and the *Times* is conducting a trial of voice over frame relay at several core locations using equipment from Cisco Systems, Inc. and Motorola, Inc.

Applications have driven network changes, said Dave Brown, director of the newspaper's network services. Also driving the changes are the need to increase productivity and create a unified network that can be managed remotely.

"Three years ago, we had a big push," Brown said. "People were getting PCs, and everyone wanted E-mail."

The Hartford Courant in Hartford, Conn., also is trying new technology, replacing a network more than 20 years old with 100M bit/sec. Ethernet using Cisco's 5000 and 3000 switches.

"We've got one fairly unruly backbone," said Tim Aston, manager of personal computing systems at the *Courant*. "It's basically an unmanageable situation. There's no way to troubleshoot or do network diagnostics."

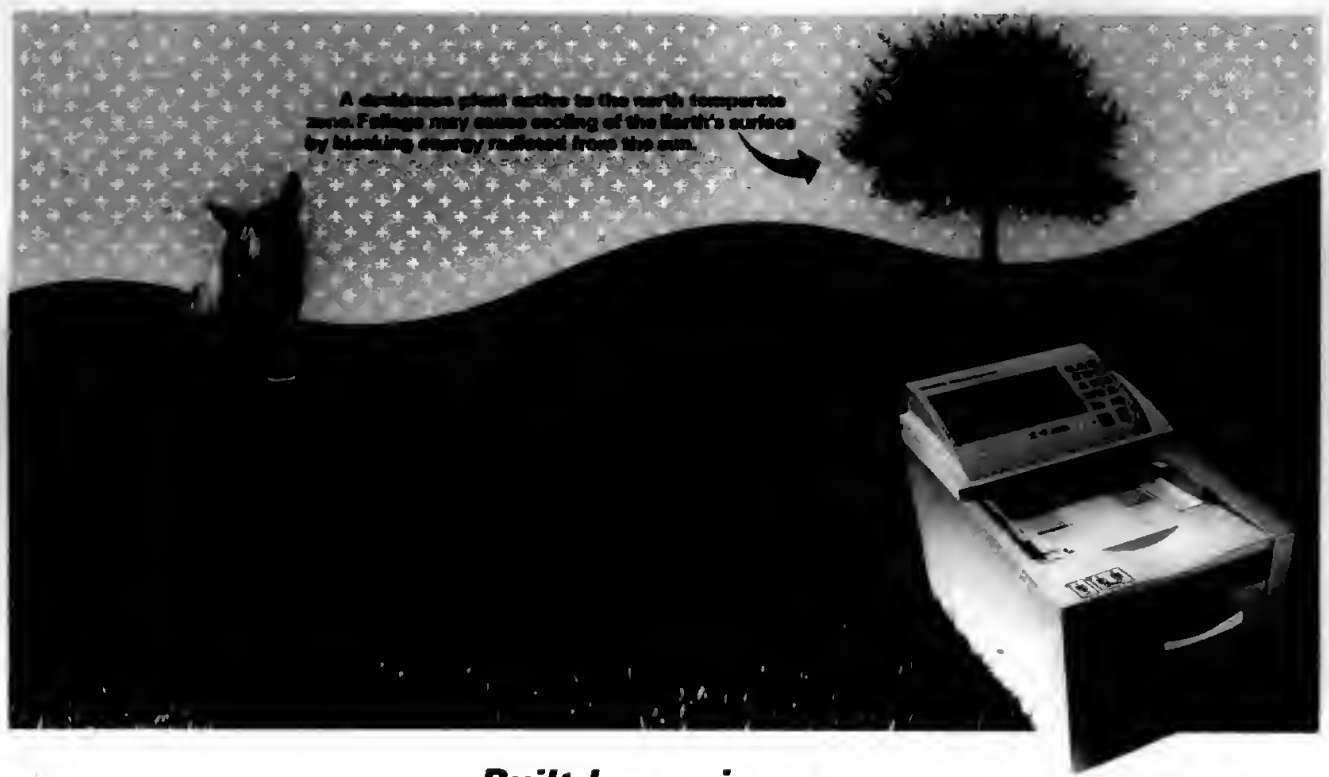
The *Courant*'s system links 900 computers. About 10 bureaus are connected by frame-relay and fractional T1 circuits. The new network will enable engineers to manage all switches and ports and to better respond to points of failure, Aston said.

At the *Globe*, information systems managers expect a $200,000 investment in six Bay Networks, Inc. ATM switches to improve network capacity, traffic control and management. The company uses frame relay with fractional T1 lines from Nynex Corp. to link five news bureaus to the main office in Boston.

"Most applications now will benefit by having more bandwidth to a server," said Bill Meisner, systems manager at the *Globe*.

To connect 40 sites within the *Globe*'s distribution network to its headquarters in Waltham, Mass., the company uses Motorola routers with 56K bit/sec. circuits to handle data, fax and voice.

The equipment being used to provide voice over frame relay should pay for itself within 13 months, Meisner said. □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NEW PRODUCTS

LAN Workstation 6.0a, network management software.

According to the Santa Clara, Calif., company, the product combines network management, metering, inventory, software distribution, metering and reporting. It uses an OLE-compliant Windows 95 Explorer interface.

Pricing starts at $50 per node for 100 nodes.

to deliver messages within an organization.

Pricing starts at $199.

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SKELETON SYSTEMS, INC. has announced a SmartSwitch module for its MMAC-Plus enterprise switching platforms.

According to the Rochester, N.H., company, the SmartSwitch module integrates Fast Ethernet and Ethernet connections on one module.

inbox Succode to 13 standard bar codes and Bar Badge to print low-cost identification cards.

The suite is included with XL and XL Plus label printers.

Pricing starts at $249.95 for printers and software.

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U.S. Robotics to introduce remote access products

By Ed Golden
HANNOVER, GERMANY

U.S. ROBOTICS CORP. in Skokie, Ill., last week announced two new Digital Subscriber Line (DSL) remote access products.

One is aimed at telephone service providers and small business offices. The other was designed to give high-speed, inexpensive remote access to corporate local access networks and the Internet over standard telephone lines.

U.S. Robotics made the announcement at the CeBit trade show held here last week.

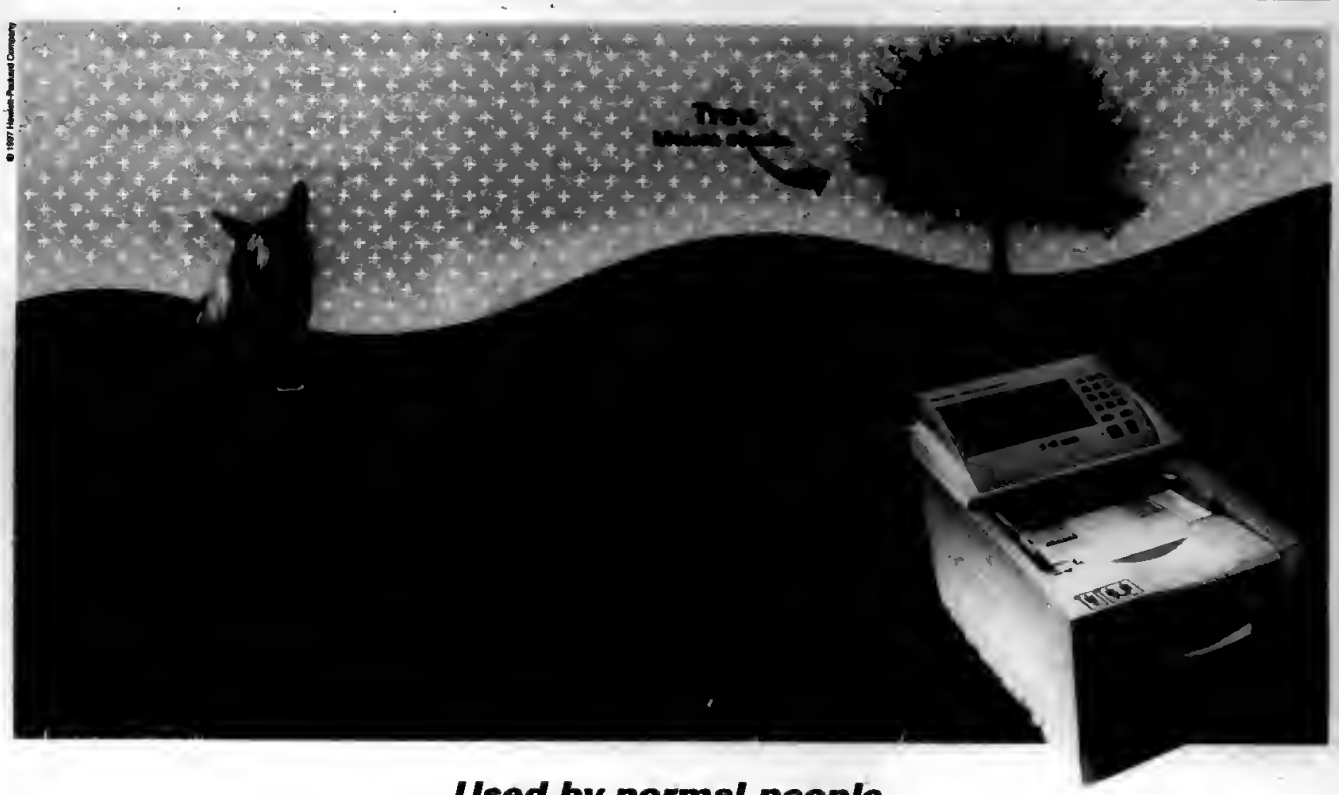
One of U.S. Robotics' new products is AxCELL, a two-port rate adaptive card set that will use the company's Total Control remote access server to provide a Remote Asymmetrical Digital Subscriber Loop (RADSL) access concentrator. The concentrator will support 32 ports per chassis and house up to 16 dual-port AxCELL card sets. It costs $775.

The second product, Viper-DSL, is an RADSL-to-Ethernet router that supports multiple users on an Ethernet LAN. Viper-DSL works with an external voiceband plain old telephone service splitter, which lets users transfer data during conversations. The product, which will initially cost $495, will likely drop in price as phone companies roll out more DSL services to businesses and consumers, a U.S. Robotics official said.

Viper-DSL can download data over the router at transfer speeds of 1.5M bit/sec. downstream and 384K bit/sec. upstream.

The products are being beta-tested by several companies and are scheduled to be available in early May, officials said. □

Golden writes for the IDG News Service's Boston bureau.



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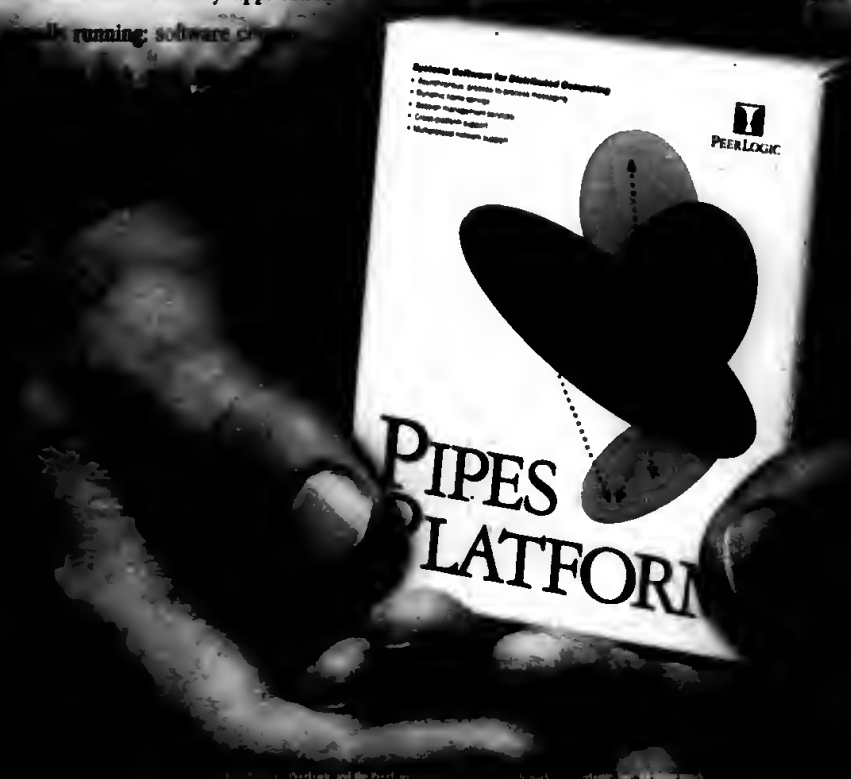
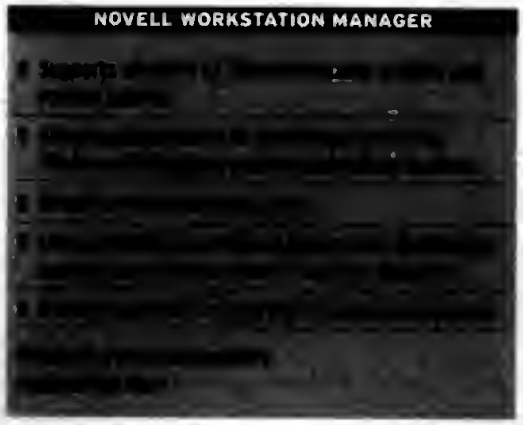


Tools boost NT/NetWare integration

CONTINUED FROM PAGE 59

run around the other, but so long as they can co-exist, who cares about the marketing games."

Neil MacDonald, an analyst at Gartner Group, Inc., a consulting firm in Stamford, Conn., agreed. "Windows NT is here to stay — and growing. And, much as Microsoft wishes otherwise, users are not just tossing NetWare out the door," MacDonald said.



The two new NetWare/Windows NT integration products are a long-awaited concession by Novell that it must help its users tie Windows NT and NetWare together or risk alienating customers and driving them into Microsoft's waiting arms, users and analysts said.

FOOT DRAGGING

Novell initially resisted such integration. By contrast, Microsoft — which was pushing hard to make inroads with Windows NT Server — has been shipping its Windows NT File and Print Services for NetWare software for nearly two years. Microsoft's integration package lets NetWare users access and share files with colleagues on Windows NT networks.

In a survey of 250 NetWare users by Computerworld Research, Inc. in Framingham, Mass., 66% of the respondents said they will remain loyal to NetWare. But they also said the door is wide open for Windows NT Server: Forty percent said they are using Windows NT as an application server.

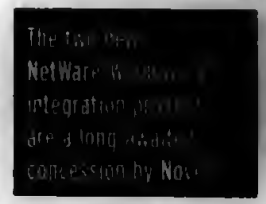
Roughly 7% of the respondents who said they will switch to NT Server said they will slowly replace NetWare over a period of several years. Only 2.5% said they are moving to quickly replace NetWare with Windows NT.

Rick Soto, network systems specialist at Florida's Department of Transportation in Miami, said that with only two network administrators for five sites and 500 users, it is essential that products such as Novell Administrator for Windows NT be available.

SAVES TIME

"By enabling me to perform all user account creation and authentication under NDS, the Novell integration software cuts the time I used to spend resetting user accounts by 80%. It also saves the [agency] the cost of overtime pay or hiring additional administrative staff," Soto said.

"Novell Workstation Manager will be a great help," said John Franklin, systems engineer at CNA Insurance Cos. in Chicago. CNA has 30,000 NetWare



servers at 200 sites worldwide and has just begun to roll out significant numbers of Windows NT Workstations. "NDS is a far superior directory," Franklin said.

Novell Administrator for Windows NT is free to current IntranetWare and ManageWise users for the next six months from Novell's World Wide Web page (www.novell.com). The Novell Workstation Manager software utility is free with the current version of the IntranetWare Client for Windows NT. It also can be downloaded from Novell's Web site. □

Xyplex turns up heat on WAN servers

CONTINUED FROM PAGE 59

called Dave Overton, communications development manager at Schnitzer Steel Industries in Portland, Ore., which has long used Xyplex gear in its 35-site WAN. "They're a huge company but were largely out of sight, which didn't cut it with customers. But we think they're headed in the right direction now," he said.

Xyplex will continue to sell, support and enhance its LAN switches, but it is shifting the bulk of its resources to WAN access server development.

ENHANCED PRODUCT

The vendor is pinning its hopes on EdgeBlaster, a product due later this year.

EdgeBlaster was designed to combine remote access server capabilities and WAN access server technology in one system. It will compete with similar products shipping from Ascend Communications Corp., Bay Networks, Inc. and 3Com/U.S. Robotics Corp.

"It's good to see Xyplex go back to remote access and routing technology, which are the reasons why we went with them in the first place," said Jeff Banks, technical support manager at Northwest Multiple Listing Service, a dial-up real estate listing service in Kirkland, Wash.

EdgeBlaster was designed to let information systems managers support remote workers dialing in to the network on everything from analog lines to High-Bit-Rate Digital Subscriber Line links, while serving as the hub of corporate WANs using data services such as X.25, frame relay, T1 and T3 links.

Larry Fox is interested in Xyplex's plans to add support for 56K bit/sec. modem technology to EdgeBlaster.

"We're looking at redoing our entire modem strategy to take advantage of the higher dial-up speeds," said Fox, associate director of network and telecommunications at Wright State University in Dayton, Ohio. "But we're looking at Ascend and Cisco [Systems, Inc.] equipment as well."

Xyplex has the technology to continue its success in the WAN access server market but could benefit from stronger ownership, said Skip MacAskill, an analyst at Gartner Group, Inc., a consulting and research firm in Stamford, Conn.

That's because the company was bought by two companies with little or no profile in internetworking. Defense contractor Raytheon Co. in Lexington, Mass., purchased Xyplex, then last April sold it to Whittaker Corp. in Simi Valley, Calif. □

BLASTOFF

Xyplex's EdgeBlaster combines remote access and WAN server functionalities in a stackable system

WAN features: Connects Ethernet and Fast Ethernet users to WAN services, including X.25, ISDN, frame relay, T1 and T3

Remote access features: Supports analog dial-up, 56K bit/sec. modem and HDSL access from remote sites

Key features: Web-based configuration, security options including firewall, data encryption standard and Remote Authentication Dial-In User Service server functionality

First release: Second half of 1997

Pricing*: $525 per port for a 48-port system

*Estimated

Lotus to roll out Domino management update

CONTINUED FROM PAGE 59

no's built-in replication capabilities, according to John White, manager of groupware development at J. P. Haynes & Associates, Inc., an Orangeville, Ontario-based developer of vertical Domino applications. "We will be able to design applications that manage documents across distributed servers using [Domino.Doc]," he said.

MESSAGING GROUPWARE

And those applications will be accessible either from a Notes client or a Web browser, White said.

SIMPLE TASK

White said readying existing Notes applications to take advantage of Domino.Doc would involve adding a few forms within the application but wouldn't be a major development undertaking.

Other Notes veterans applauded the plan to enhance Domino with a document-management add-on but said they have already gotten around the lack of document-management in Notes.

"We already have a pretty good document-management system based on Notes that we've written ourselves, so I'm not sure what I'd be getting [with Domino.Doc] that I don't already have," said Michael McGhee, director of administrative computing at the University of Nevada in Las Vegas. "If I had the requirement to add document management to an application today, though, I'd look at [Domino.Doc]."

Nathaniel Palmer, a senior consultant at Delphi Consulting Group, Inc., a research firm in Boston, said Domino.Doc will go head-to-head with Docs Open from PC Docs, Inc. in Burlington, Mass. Docs Open is positioned at the lower end of the market. But unlike Docs Open, Domino.Doc will require that companies buy in to Domino as well.

Domino.Doc will be sold as an add-on application to Domino. It will ship in the second quarter. Pricing is $4,275 for uniprocessor servers and $12,825 for multiprocessor servers. □

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The Internet

The World Wide Web • Intranets • Online Services

Briefs

"The bottom line is support. We can't afford to provide support for every browser."

Add-on kits standardize browsers, save money

By Justin Hibbard

WHEN NETSCAPE Communications Corp. and Microsoft Corp. last year introduced browser administration kits, both vendors highlighted features for adding custom buttons and logos to Internet client software.

Six months later, information systems managers say the kits aren't just useful for customizing browsers. They are also useful for centrally managing and standardizing browser configurations.

SETTING THE STANDARD

Not all browsers display HyperText Markup Language pages the same way, and nonstandard browsers are often what prompt users to request support, said Mike O'Hara, webmaster at Information Builders, Inc. in New York.

Setting a standard can prevent intranet developers from having to create multiple versions of the same page to support different browsers.

The administration kits let IS departments configure browsers to query a file on a central server at start-up. The file automatically updates browser settings such as proxies, security levels and preferences. Administrators can lock down the

Browser kits, page 73

Sources of revenue from the Internet

Infrastructure	
1996:	$4 billion
2000*:	$30 billion
Access	
1996:	$4 billion
2000*:	$33 billion
Content	
1996:	$200 million
2000*:	$37 billion
Financial services	
1996:	$200 million
2000*:	$23 billion
Business-to-business	
1996:	$600 million
2000*:	$66 billion
Retail	
1996:	$500 million
2000*:	$7 billion

*Projected

Source: Forrester Research, Inc., Cambridge, Mass.

Nimble Marimba

▶ *Aetna spin-off aims to push applications and information*

By Mitch Wagner

E.BENEFITS, INC., a start-up funded by insurer Aetna, Inc., seeks to provide electronic services that would let users look up and make changes to benefits packages over the Internet.

Under the new services, it wouldn't matter who the users work for or what company provides their benefits.

The application is a recent example of software that is being developed using a "push" technology product from Marimba, Inc.

By using push technology, E.Benefits and Aetna hope to interact with consumers more immediately and in a richer manner than by using competitive Internet channels and other technologies.

OTHER MARIMBA DEALS

Other recent push technology applications include software from CNNfn in Atlanta, a unit of Cable News Network, Inc., which will watch a user's private portfolio of stocks and investment for news and changes; and an "infinite CD-ROM" application from the Corporation for Public Broadcasting, which will hawk videotapes via PBS Online.

PBS will distribute a regular CD-ROM with a catalog of about 1,000 videocassette titles. Between CD-ROM releases, users will get updates of new titles by using data pushed through a Castanet channel, said Cindy Johanson, managing editor of PBS Online in Alexandria, Va.

David Donahue, president of E.Benefits in East Hartford, Conn., said his company select-

Marimba, page 73

Java applets can "steal" cycles off any computer that logs on to a Web site.

MIPS-snatching apps: Threat may be benefit

By Sharon Machlis

WHILE YOUR USERS are surfing the Web, outsiders can snatch more than information from their computers — a devious programmer could actually steal their processing power as well.

The technique, which has been dubbed "MIPS-sucking" by *Computerworld* columnist and MIT Media Lab researcher Michael Schrage, involves applets that download to a World Wide Web browser's machine, use its processor to perform computations and then send the results back to a host.

But the same technique that lets hackers swipe CPU cycles over the Internet also may help companies better use their own idle computing resources in-house — if anyone finds a practical way to put it to use.

It isn't too hard to write a MIPS-sucking Java applet. An Andersen Consulting research

MIPS-snatching, page 71

• Enabled by new technology

Web is conduit for new printers, faxes

By Matt Hamblen

IMAGINE YOU RUN a large business that wants to cut long-distance fax costs by sending digital documents over the World Wide Web.

A user could call up a Web address that identifies a printer in a distant city and make multiple high-quality color copies, all collated, stapled and ready to go — sparing someone at the other end the job of taking a fax to a copier.

Some small businesses already use all-in-one desktop devices that combine printers, copiers and faxes for sending digital documents over long-distance lines. But still in its infancy is the ability to bring such multifunction devices to large enterprises and to Web-enable them.

The U.S. market for multifunction devices totaled nearly $2 billion last year, up from $1.4 billion in 1995, according to International Data Corp. (IDC), a research firm in Framingham, Mass.

That market, of which about 80% is made up of small-office users, is expected to grow as large, high-speed copiers are attached to faxes or become Web-ready, analysts said.

Devices, page 71

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Devices print and copy over Web

CONTINUED FROM PAGE 67

Several major office product vendors are on the verge of making it possible to attaeb high-speed color printers to the Web.

But some network managers and industry observers, citing worries about Internet security and reliability, said they are still skeptical that the technology is ready for business use.

"Security and reliability are the biggest concerns," said Andrew Johnson, a senior industry analyst at Dataquest in San Jose, Calif. "Sure, you can send the document over the Web, but are you sure it got printed out? It may be telling you it got printed, but did it get printed at the place you wanted?"

From a security standpoint, analysts said, network managers must be able to set up a Web-enabled printer in a way that prevents hackers from tapping in to secure files. And companies that print via the Web must be able to fend off anonymous or unwelcome print jobs — such as unsolicited advertising — which could burn up toner, paper and printer time.

Grant June, information systems director at Credit Counseling of America in Grand Island, N.Y., said he isn't ready to take his networked printers to the Internet.

June recently purchased a high-speed printer and a multifunction device with copier, printer, scanner and fax capabilities to replace old dot-matrix printers. Both machines were made by Canon USA, Inc. in Lake Success, N.Y. They connect three Credit Counseling offices in Dallas, Las Vegas and Buffalo, N.Y., on a wide-area network.

"There's good money savings when our people can send a print job instead of a fax, and it's a great time-savings," June said.

June said he is pleased about using the Canon products over the WAN, but he is still worried about sending data on customers' debt consolidation programs over the Web or the Internet.

David Wade, communications manager at Management Recruiters International in Cleveland, has a Docutech bulk printer and seven network-attached Xerox Document Centre devices to do faxing, printing and copying. They were made by Xerox Corp. in Rochester, N.Y. Accompanying software from Xerox lets PC users manage the devices.

IS IT SECURE?

Xerox promises a Web-enabled version of the software, but Wade said he isn't enthusiastic. "I don't know that it does make sense to have it on the Web. The advantages might be undercut by security" concerns, he said.

Several vendors are primed to enter the Web-enabled peripherals market using multifunction devices (see chart below). Their plans include the following:

- Xerox will upgrade its standalone printing products to work as network-attached devices. The company's first desktop printer to work with a Web server will be announced within two months. Xerox plans to embed a processor board in some printers so users can download printer software upgrades from the Web, for example, or send messages via the Web about printing jobs.
- Canon plans to demonstrate its Web Netspot software in October at Networld/Interop '97 in Atlanta. That software will be bundled with peripherals that assign each device a Web address and will let a network administrator monitor peripherals at distant sites via the Web. Canon earlier this year announced WebRecord software, designed to download Web content to a printed page.

Source: International Data Corp., Framingham, Mass.

- Hewlett-Packard Co. in Palo Alto, Calif., last year started to sell its Mopier and WebJet Admin products to take advantage of the peripherals market provided by networks and the Web. Analysts said it is still too early to assess the products' success.

Despite the peripherals available and those coming for the Web, analysts said they aren't sure whether IS managers will find them worth the additional work. □

Taking off

The market for enterprise-class multifunction devices, now in its infancy, could grow sharply in the next two years as companies begin to attach the devices to the Web, analysts said.

There is plenty of skepticism about the security and reliability of using the Web to transmit documents to printers, but analysts said many corporate IS departments will embrace the chance to get several functions in one machine from one vendor.

Eighty percent of the multifunction devices sold in the past two years were desktop machines used in the small office/home office market, analysts said. Workgroups make up another market.

Enterprise-quality devices can cost $10,000 to $100,000, depending upon features. Prices can rise by about $1,000 for each page per minute that a copier can produce. — Matt Hamblen

HOW TO STEAL CPU CYCLES

- Web site hosts a Java (or ActiveX) applet designed to do calculations using the processing power of any computer that connects to a home page.
- The applet downloads to a user's computer when the user logs in.
- Applet runs in background while user surfs the Web. It sends back to the host site the results of its computations on a specified problem until the browser is closed.
- Experiments showed that 40% of a computer's processing power could be taken this way without noticeable degradation in performance.

MIPS-snatching 'net threat

CONTINUED FROM PAGE 67

team wrote an experimental in-house applet that performed multiplication tasks on any machine connected to an intranet site to test how well such an applet would work.

"About 40% of a CPU could be grabbed in a way [users] didn't even notice," said Bruce Krulwich, formerly at Andersen and now a senior research scientist at AgentSoft Ltd., an Internet software developer in Jerusalem. "I would say client machines on the Web are an underused resource."

The Andersen applet stopped sending results as soon as a user left the intranet site.

But it is possible to override an applet's "stop" mechanism and keep it running after a user leaves a site, said Gary McGraw, a research scientist at Reliable Software Technologies Corp. in Sterling, Va.

The co-author of *Java Security: Hostile Applets, Holes, and Antidotes*, McGraw wrote a demonstration applet that runs as long as a user's browser runs, no matter where the user clicks after visiting its page.

Hackers could find this a useful tool to grab enough power to crack encryption schemes, McGraw said.

Researchers have long sought ways to easily harness computing power over a network for other heavy number-crunching tasks such as movie animation or engineering analysis. "We've been big believers of this for some time," said David Gelernter, a computer science professor at Yale University.

LOGISTICS PROBLEM

Dealing with an application that is looking for a file at a particular place on the hard drive — a place that may not exist — is another problem, said Alan Karp, a parallel-processing expert at Hewlett-Packard Labs in Palo Alto, Calif.

"Given the incentives to get at all these cycles, the fact that they aren't used tells me the logistics are too big a problem," he said.

"People have talked about using desk cycles for some time," said Gordon Bell, co-founder of Digital Equipment Corp. and a senior researcher at Microsoft Corp.'s Bay Area Research Center in San Francisco.

"Sure it can happen. But will it? Maybe. Someone may come up with a compelling [application] that exploits it. There's nothing hard technically," Bell said. □

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Ricoh Aficio Ricoh West Caldwell, N.J.	Color or black-and-white digital copier and printer	$15,000
Canon GP and CLC series Canon USA Lake Success, N.Y.	Color or black-and-white digital copiers and printers. Can be upgraded to include fax.	$10,000
HP LaserJet 5Si Mopier Hewlett-Packard Palo Alto, Calif.	Digital black-and-white printer that can staple and sort	$9,500

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Marimba gives apps a push

CONTINUED FROM PAGE 67

ed Palo Alto, Calif.-based Marimba because of the company's Java expertise and because Marimba offered broad flexibility in how the data would be displayed to consumers.

The E.Benefits, CNNfn and PBS applications are examples of how organizations can use push technologies to sell products or services. The applications go beyond the streams of news headlines and database updates that high-profile push vendors such as Cupertino, Calif.-based PointCast, Inc. provide.

Marimba's Castanet application was designed to send programs and information down the pipeline. This will let companies deliver multimedia content to users' desktops along with the software needed to play it. Companies also could automatically push to desktops the latest update of applications such as word processors or spreadsbeets.

Marimba's competitors include BackWeb Technologies, Inc. in San Jose, Calif., Tibco, Inc. in Palo Alto, Calif., and Wayfarer Communications, Inc. in Mountain View, Calif.

Donahue said E.Benefits chose push technology over conventional Internet technology because push technology is more immediate.

And Marimba's connection between applications and data means the E.Benefits service can be more interactive. For example, the service could automatically notify an employee whose medical claim is refused, rather than wait until the employee checks an intranet or World Wide Web site.

The software, which will be deployed in about six months, will let companies create links to benefits suppliers such as 401(k) houses and insurers.

Employees then receive immediate updates about changes to their benefits packages. Employees also can download an application that will tell them why they were turned down and walk them through the process of filling out a new application for assistance. □

Browser kits offer standardization

CONTINUED FROM PAGE 67

browsers so end users can't change these settings.

The features of Netscape and Microsoft kits are similar. The glaring difference between them is the price: Microsoft's kit costs $20, and Netscape's costs $1,995.

But for a company with 1,000 or more users, Netscape's kit pays for itself with one use, said Pete Skinner, manager of technology architecture at BC Hydro Corp. in Vancouver, British Columbia.

Skinner said the cost of paying administrators to update the configurations manually for the 1,000 browsers at BC Hydro would far exceed the cost of the kit. Updates would take place whenever the names or locations of proxies or gateways change. "I saved $2,000 the first time I made changes to the desktop," he said.

Matt McLean, a systems analyst at Reynolds Metals Co. in Richmond, Va., said his company gains similar benefits from Microsoft's Internet Explorer Administration Kit. Administrators use the kit to standardize and update settings for proxies, mail servers, preferences and Internet and intranet sites stored on Internet Explorer's Favorites menu.

"It gives us the ability not to have to redistribute the software every time the configurations change," he said.

But unlike BC Hydro, which uses an automatic software distribution system to install browsers on desktops, end users at Reynolds download browsers from a page on its intranet. The company also distributes plug-in applications and patches from an intranet page.

COMPLIANCE IS DIFFICULT

But getting end users to adhere to the standard isn't always easy, said Joe Meadows, World Wide Web proxy service product manager at The Boeing Co. in Seattle. The number of far-flung employees at the aviation company makes it impossible to regulate browser usage, he said.

McLean said the situation at Reynolds is more manageable because fewer employees are involved. Reynolds is migrating from Netscape Navigator to Internet Explorer.

"Our policy is we're not going to force anybody to get off Navigator," McLean said. "But the bottom line is support. We can't afford to provide support for every browser." □

SHORTS

Melding directories

CCOM Information Systems in Iselin, N.J., has added two Lightweight Directory Access Protocol (LDAP)-compliant products to its directory software.

MasterDirectory 3.0 collects and synchronizes information from different sources and pumps it into LDAP-compliant directories, including Netscape Communications Corp.'s Directory Server. PhoneLine for LDAP lets users manage all telephone activities — such as dialing, transferring and conference calls — through a PC. A bundle of the two products will be available in the second quarter. The bundle will cost $1,995.

Internet maintenance

Project Software and Development, Inc. and Nets, Inc., both in Cambridge, Mass., together will develop and market technology to let companies buy and sell maintenance, repair and operations (MRO) supplies on the Internet. MRO supplies include recurring purchases for the items needed to keep a company running, such as bearings, pumps, motors and gaskets. PSDI currently makes MRO client/server software. Nets, whose chairman is former Lotus Development Corp. CEO Jim Manzi, provides intermediary services for business-to-business transactions on the Internet.

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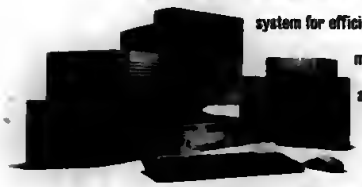

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Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

Review your boss

Systems integrator Claremont Technology uses workers' appraisals to improve managers' skills.

See page 80

Raytheon aims to build aircraft quicker

By Maryfran Johnson

"We had an organization where nobody wanted to be accountable. We had a culture of public floggings. But we're trying to change the whole environment to rid the company of that."

That's Cap Parlier, chief information officer at Raytheon Aircraft Co., speaking with the straight-arrow frankness that reveals his engineering roots.

The subject is Raytheon Aircraft's massive, ongoing restructuring of its information systems, business and technical processes. The $2.3 billion aerospace manufacturer is striving to slash at least 25% from its product cycle time: the seven to 10 years it can take to design and build airplanes.

"We've got [the process] down to five to six years and are looking to improve that," Parlier said last week. "But we're still right in the middle of it."

Appointed last summer as the first-ever CIO at the Wichita, Kan.-based aircraft manufacturer, Parlier is responsible for a $20 million IS budget and worldwide IS delivery to 15,000 employees. Raytheon Aircraft,

Raytheon, page 79

Outsourcing? Forget all the experts' buzzwords

▸ *Cost cutting still drives most deals*

By Thomas Hoffman
LAKE BUENA VISTA, FLA.

THE EXPERTS throw around terms such as "business value" and "focusing on core competencies" when they talk about the reasons companies move to outsourcing.

But truth be told, most information systems managers continue to be preoccupied with just cutting costs.

Cost savings "are still the primary driver" for exploring outsourcing, said Charles D. Branch, supervisor of financial and administrative services for the IS group at Carolina Power & Light Co. in Raleigh, N.C.

Outsourcers typically promise to cut IS costs by 5% to 20%, but unforeseen add-ons, such as new application development not covered under the original contract, can reduce those savings.

But achieving those savings is another story.

Take CoBank, which six months ago signed IBM to a 10-year outsourcing deal to run its IS operations "from soup to nuts," said Michael A. Luby, senior vice president of operations at the $20 billion bank in Englewood, Colo. Even though IBM took responsibility for CoBank's help-desk functions, its contract didn't state which company would pay for a server to connect IBM's Boulder, Colo., facility with CoBank, Luby said.

The two companies finally reached a compromise on the costs of several servers, but not before considerable haggling, Luby said. "We've had some bumps along the way," said Lu-

Outsourcing, page 77

Tracking telephone fraud fast

▸ *Data warehouse aids WorldCom security*

By Jaikumar Vijayan

AT 11:19 A.M., a stolen telephone credit card is used to make a call from New York to South Africa. At 11:21, the same card is used to make an international call from Seattle. And two minutes later, another call is made with the card — this time from Los Angeles.

In less than one hour, calls costing well over $1,000 are placed from the three cities and charged to the same credit card.

Meanwhile, officials at WorldCom, Inc., the card issuer, are busy pulling Call Detail Records from a central data warehouse at the company's headquarters in Jackson, Miss. They were flagged to the possible fraud-in-progress by WorldCom's detection system.

Less than 10 minutes after each call is completed, officials can pull detailed information on where the call was placed, the destination, duration, billing address, authorization code and more.

By the time the last call is completed, security analysts at

Tracking, page 80

Scottish utility tries to end the vendor blame game

By Craig Stedman

SCOTTISHPOWER is giving vendors that want to play a role in its sprawling distributed processing environment a little motherly advice: Don't point fingers at other people.

With total deregulation of the U.K. utility industry coming next year, ScottishPower is losing its monopoly grip on electricity sales and distribution in Scotland. The Glasgow-based company is trying to steel itself for a new era of competition by moving all its applications from central mainframes to a mix of systems that individual business units have chosen.

But information about ScottishPower's 5 million customers has to move seamlessly among applications, said David Jones, managing director of the utility's Information Systems Division.

A key step Jones took to ensure interoperability was to force the 16 vendors and systems integrators playing major roles to contractually agree to work together and refrain from

Utility, page 80

Compaq: 2 processors short of a 6-pak.

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Outsourcing costs

CONTINUED FROM PAGE 75

by, who expects CoBank to reduce its annual IS costs by 5% in the first year of the 10-year pact and 20% in future years.

Those "bumps" have forced Luby to spend 20% to 30% of his time managing the IBM contract, a far cry from the 10% or less he had anticipated when the deal was signed.

"We're seeing that outsourcing isn't always cheaper," said Howard Anderson, managing director at The Yankee Group in Boston, which hosted its seventh annual outsourcing conference here earlier this month.

Cost savings are also a cause of concern for Grupo Nacional Provincial, an insurance company in Mexico City. The insurer is close to outsourcing the bulk of its IS operations to a third party. But because of the uncertain economic climate in Mexico, the company decided it wants a short-term contract. The problem is that outsourcing vendors "are accustomed to the long-term approach," said Cecilia Ortiz Bulle Goyri, an IS manager at the firm.

Hilton Equipment Corp. expects to cut its procurement costs by 10% to 15% once Electronic Data Systems Corp. rolls out an automated procurement system to the group in July, said Donald Royal, senior vice president and general manager at the Beverly Hills, Calif., purchasing arm of Hilton Hotels Corp.

However, it took Hilton and EDS 15 months to hammer out an agreement because contract negotiations "got bogged down in legalese," according to Royal.

Finally, Hilton and EDS temporarily pulled their attorneys from the talks and wrapped up a deal within three months.

"Keep the attorneys out of it until you need the legal language. Then be skeptical of the language," Royal said. □

& Watch out for common land mines when engaging an outsourcer. Page 82.

Users say move quickly when outsourcing your personnel

▶ *Benefits, compensation remain thorny issues*

By Thomas Hoffman
LAKE BUENA VISTA, FLA.

ALTHOUGH 40% of the biggest companies in the U.S. have outsourced at least one major piece of their operations, it hasn't gotten any easier for information systems managers to deal with the ensuing thorny personnel issues.

CNA's David W. Wroe: Staffers were 'caught by surprise' by the insurance giant's decision to outsource

Compensation, benefits and career opportunities remain "extremely sensitive issues," said Eric M. Timmreck, manager of business solutions at Shell Services Co. in Houston who was one of 120 attendees at The Yankee Group's Seventh Annual Outsourcing conference held here earlier this month.

But several conference speakers offered a word of advice: Move your affected staffs as quickly as possible to the outsourcing vendor.

TIME HEALS

Yankee Group founder and managing director Howard Anderson estimates that 80% of IS staffers are "strongly negative" about outsourcing when management first announces its plans.

But only 20% of the personnel "are negative to any degree" six months after the contracts are under way, according to Anderson.

"The sooner [outsourced employees are] transitioned in, the better that will ultimately affect service levels," said Michael McGaughey, a senior consultant at KPMG Peat Marwick LLP in Dallas.

David W. Wroe, senior vice president and chief technology officer at CNA Insurance Cos. in Chicago, said he "surprised" the company's 650 data center employees in November when he announced CNA's intent to outsource its glass house operations to Computer Sciences Corp. (CSC).

That came the day after the insurer disclosed plans to create a business process outsourcing partnership with the El Segundo, Calif.-based systems integrator [CW, Nov. 25].

Since then, Wroe and CNA management have met with the company's data center employees every two weeks to discuss the most-recent wrinkles of the 10-year, $2.2 billion outsourcing deal that is slated to go into effect in June.

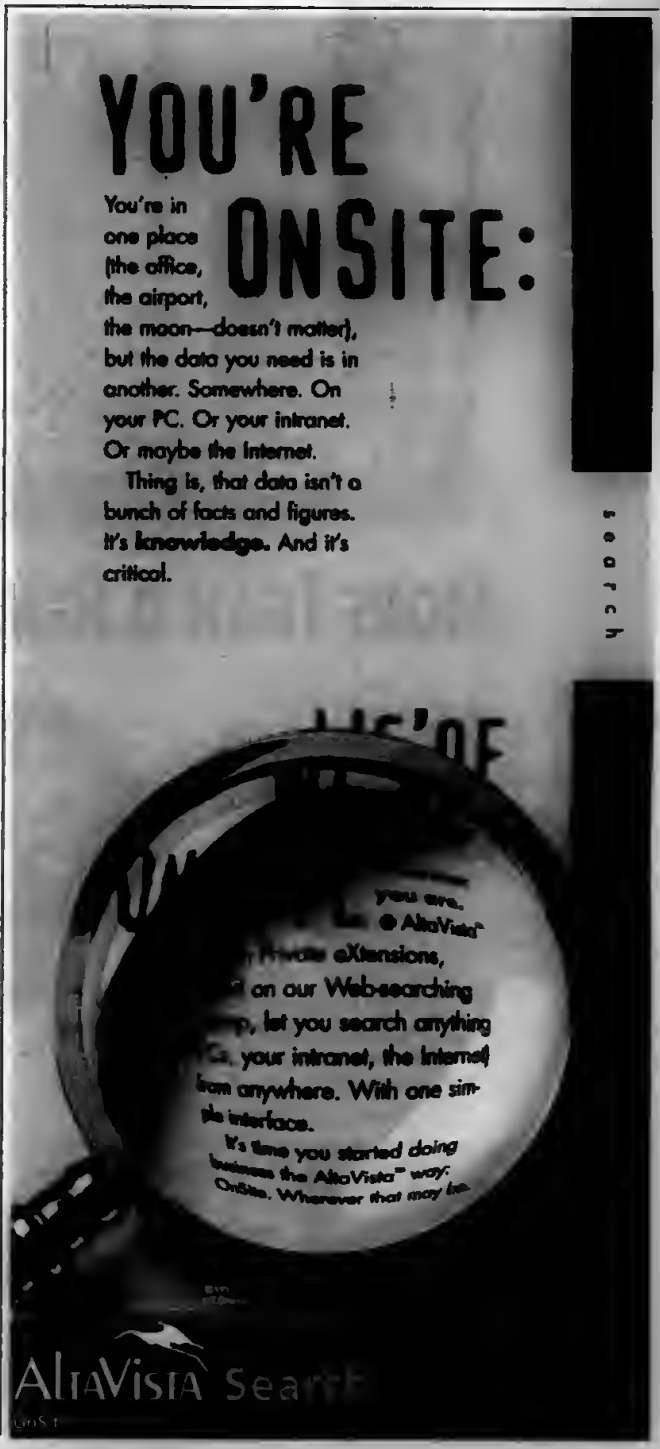
"We want to make sure, for example, that someone's vacation time won't get skewed" after they become CSC employees, Wroe said.

BETTER JOBS

Hilton Equipment Corp. faced similar obstacles when it outsourced its procurement operations to Electronic Data Systems Corp. under a 10-year deal in November.

The move will leave a handful of Hilton's 40 procurement specialists, such as data-entry clerks, without jobs, said Donald L. Royal, senior vice president and general manager at the Beverly Hills, Calif., purchasing arm of Hilton Hotels Corp.

But the company hopes to recast those employees into "higher-level positions" as the company's sales grow, Royal said. "As we grow, we'll need [experienced] people to help us." □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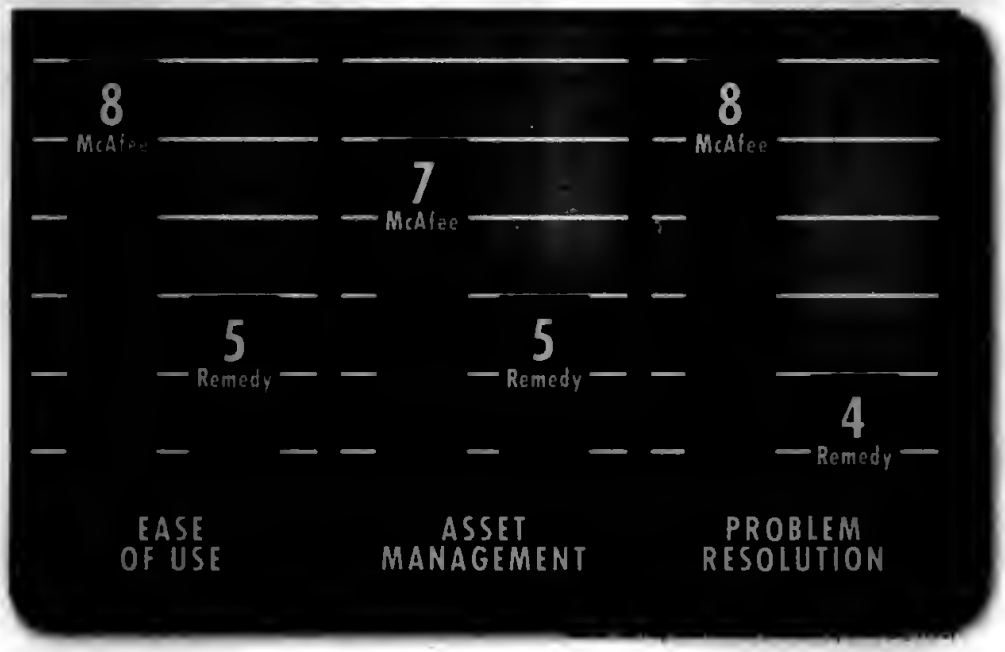

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Raytheon aims high

CONTINUED FROM PAGE 75

which is entering its third year of restructuring its engineering and production workflow systems, is one of four divisions of $12 billion Raytheon Co.

Industry analysts said greater turnaround is crucial for the company in its accelerating rivalry with Cessna Aircraft Co., which produced 122 business jets last year, compared with Raytheon's 93.

Raytheon officials said their 65-year-old company used to create an airplane design roughly every 20 years. Today, three planes — the MkII turboprop and the Premier I and Hawker Horizon business jets — are being developed simultaneously. "It's like laying down track in front of a speeding freight train," one company insider said.

Serial development, in which each engineering group finishes its piece and hands it to the next group, clearly wastes "huge amounts of money," Parlier said.

So Raytheon's once-isolated groups of engineers now work in any of nine integrated product teams with representatives from other departments such as marketing, product support, human resources and quality assurance. Customer focus groups are also consulted regularly for their feedback.

Raytheon Aircraft's Premier I business jet, shown in computer-generated images, will hit the market late next year. It is the first airplane developed end-to-end using Raytheon's new process of integrated product teams.

Among Parlier's first moves last year as CIO was to establish 18 IS project manager positions, designed to coordinate more closely the work of the product teams and business units.

"I tell the project managers, 'You're signing up to be the lightning rods,'" the onetime experimental test pilot said. "You gotta stand up, take the strikes and love it."

On the technology front, the company remains predominantly mainframe-centric even as it makes substantial investments in client/server technology, Parlier said.

The most pivotal products enabling the move to integrated teams for aircraft design are IBM's ProductManager product data management software and Catia engineering design software from Paris-based Dassault Systemes.

The first production run on the Premier I business jet later this year will showcase this integrated process working from end to end. One recent example of Raytheon's Integrated Product Development Environment at work was the creation of a fuselage design without time-consuming prototypes. n

Restructuring calls for upgrades

Now entering its third year of business and technical restructuring, Raytheon Aircraft has learned a few things about surviving a multiyear effort of such magnitude.

"You have to upgrade your infrastructure," said CIO Cap Parlier. For Raytheon Aircraft, that means an investment this year of $6 million to install a backbone 622M bit/sec. Asynchronous Transfer Mode network and upgrade to Fast Ethernet.

Taking inventory of and standardizing desktops is another goal. "We discovered that we've got 2,000 PCs on a network, another 3,000 loose out there in the departments and 4,000 dumb terminals," Parlier said. "Those fairly scary results from our survey are driving the standardization under way now."

That project alone has $3 million earmarked for it this year, with the likely upgrade choice being Windows 95, he said.

Other suggestions for surviving a restructuring include the following:

- Provide "tons of training" and lots of communication to employees about project milestones.
- Get high-level management commitment, along with the skill resources you need. Appoint project "champions" on the business side to support IS objectives.
- Don't underestimate the importance of a good help desk.

— Maryfran Johnson

Managers tweak style after they get staff feedback via Notes

By Julia King

PROJECT MANAGERS and executives at Claremont Technology Group, Inc. are getting plenty of free career advice these days.

They are soliciting it from their staff via a 3-month-old Lotus Notes-based "upward feedback system." The application was designed to elicit workers' candid appraisals of their managers' performance in several key areas. Managers then know which behaviors they need to change and which skills they need to develop further through training.

"Managers can get feedback on their leadership, management and personality style. The idea is for people to use that information to take charge of their own careers," said Naomi Wexer, director of career development and training at Claremont, a 600-person systems integration firm in Beaverton, Ore.

The performance feedback system operates over Claremont's corporate intranet. Managers electronically send a standard 49-question form to a minimum of five staffers whose feedback they desire. Staffers then use a five-point rating system to answer questions about a manager's coaching, leadership and communications skills and other traits.

Respondents' identities are protected by the system to assure candor.

"The reports that are generated are 100% anonymous. We require managers to send out at least five surveys at a time so it's not clear who responses come from," Wexer said.

John Rady, a Cleveland-based director of Claremont's Internet practice, recently used the system to poll five of his direct reports about his performance. He received four replies.

"Some of the feedback I received was that I was doing a good job keeping individuals informed about projects but that there was not a sense of team cohesiveness," Rady said.

So Rady now has set up a regular Friday morning conference call during which team members are updated on projects.

Managers can use workers' evaluations to build leadership skills and enhance their careers.
– Naomi Wexer, Claremont Technology Group

Karen Fast, senior vice president of operations, learned from feedback she had solicited that some people she manages consider her "more critical than complimentary."

"I learned that, with some people, you may need to hit them upside the head with a two-by-four but that others need to hear the good things they're doing before they're ready for constructive feedback," Fast said.

Fast's response has been to develop a range of coaching styles, which she applies to different levels of managers who report to her.

Managers also can use the feedback to help them decide whether they are better suited to a technical or business consulting career path. In other cases, a manager who already has selected one of the two career paths might find that feedback data indicates he would do better on the other.

"We don't ask people to pick one, and then they're stuck there," Wexer said. "We've had people start on the technical side, then move over to the business side and vice versa."

Soliciting staffers' opinions of a manager's performance isn't entirely new. In the past few years, an increasing number of large companies have at least dabbled in "360-degree reviews." These are reviews in which staffers, peers and managers all furnish their perceptions about an employee's performance.

What makes the Claremont system unique is its use as a leadership-building and career enhancement tool, Wexer said.

"We don't link it to our compensation process," she said. Instead, the idea is for managers to use the information they receive to plan additional training or arrange mentoring. □

Tracking telephone fraud

CONTINUED FROM PAGE 75

the company have enough information to decide if the card is being fraudulently used and should be deactivated. They also have enough information to pass along to legal authorities for prosecution purposes.

Slightly more than two years since it first implemented a $1.5 million data warehouse to assist in fraud detection and prevention, WorldCom estimates it has saved several million dollars by giving its security analysts access to more information more quickly than ever before.

Such data warehouses increasingly are being implemented by telephone companies, credit-card companies, large banks and other financial institutions to detect fraud, improve customer service and enhance support, analysts said.

FRAUD CRACKDOWN

"Fraud detection is a pretty popular data mining application" among such organizations, said Doug Lynn, an analyst at Meta Group, Inc. in Stamford, Conn.

"We used to have fraud worth millions of dollars occur every month," said Cynthia Pope, manager of application systems at WorldCom, the country's fourth-largest telecommunications company. "We helped the security group reduce that rate very significantly."

WorldCom's security group uses the database in conjunction with other fraud-detection systems to do near real-time access and querying of call data. It previously could take up to a day for the security group to get such information from the company's systems.

WorldCom's data warehouse has four days' worth of Call Detail Records online at any time. That translates into a volume of about 180 million records, each of which can be retrieved from the central database within 10 minutes of the original call. Details on up to 400 calls can be inserted into the database every second, and up to 100 users can query the system simultaneously.

SUN SERVERS

The data warehouse is loaded on two symmetrical multiprocessing Sun Microsystems, Inc. SPARCservers, each with 2.5G bytes of memory. The two support 200G bytes of disk space.

The system, which is primarily designed for fraud detection, is also being used by other departments, including customer service, support and maintenance. □

WORLDCOM'S DATA WAREHOUSE

Business issues	• Limits financial liability for fraudulent calls • Improves customer service • Makes call records accessible within 10 minutes of call
Business results	• Enhanced fraud detection • Improved repair management and quality assurance
Components	• Oracle RDBMS on 12-processor SPARCcenter 2000E • 16-processor SPARCcenter 2000 with 2.5G bytes of RAM on each processor • About 200G bytes of hard disk

Utility

CONTINUED FROM PAGE 75

the buck-passing and finger-pointing that often mar multivendor projects.

"I can't go to my users and say Sun or IBM has let me down, because they'll just tell me that I've let them down," Jones said. "And that's what I say to the vendors: 'You have a problem collectively.' I just will not accept [attempts to blame others]."

The ultimate goal is to screen users from the fact that their systems are being put together by people who wear many uniforms. And as the three-year project nears its September completion date, the forced cooperation seems to be an effective shield, said Chris Mundy, program manager for asset management applications in ScottishPower's electricity distribution unit.

"Although I'm vaguely aware that there's a bag of different tools out there, to me it's all one thing," Mundy said. "I think of [the distributed network] as an electric socket."

ScottishPower is spending 20 million pounds ($32 million) to develop its distributed architecture. Donald DePalma, an analyst at Forrester Research, Inc. in Cambridge, Mass., said that kind of money gives the utility "a big hammer" to wield against vendors. Companies that lack similar clout usually have to hire a systems integrator to ride roughshod over vendors for them, he said.

"It does help to be the size we are," Jones said. But keeping the vendors on the right track also required a hefty investment in personnel with both technology and project management skills, he said. ScottishPower's project development team has doubled to 200 people during the past three years.

NOT MUCH BULLING

Vendors that have signed on the dotted line range from giants such as IBM, Sun Microsystems, Inc., Oracle Corp. and Microsoft Corp. to Constellar Corp., a small Redwood City, Calif., company that supplies the data migration tools used to coordinate the utility's information flow. Jones said he has had to "bull them together and say I'm not happy" only once in the past 12 months.

Although the project's cost is steep, the new business rules of deregulation made staying with the mainframe untenable, Jones said. And distributed processing is expected to cut ScottishPower's annual IS operating costs by $4.8 million, or 42%, and double the computing power available to users, he added. □

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Managing

A little respect!
Women in IS want fairness – and respect – from their male colleagues. Ms. MIS. Page 84

The field of IT outsourcing is dotted with land mines. Watch out for these 20 so your budget – and maybe your career – isn't blown to bits.

KABO

By Kathleen Melymuka

A PROGRAMMER IN AN OUTSOURCED DATA CENTER submits a defective job that runs uselessly in a loop all weekend. The outsourcer charges the client $33,000 for excess computer time.

A company moving to client/server wants to terminate its outsourced mainframe contract. It learns that termination will cost $82 million.

While making requested changes to the maintenance section of a mainframe contract, an outsourcer adds some obscure but seemingly innocuous language. Two years later, when the client asks why year 2000 work hasn't begun, he learns that the obscure language effectively removed that service from the scope of the contract.

Dirty tricks or just good business?

"It may be good business for the vendor," says Chuck French, director of consulting in the Sourcing Strategies practice at Meta Group, Inc. in Reston, Va., "but it's not good business for the client."

The number of clients is growing as year 2000 prompts many companies to consider outsourcing for the first time, and those who jump in can get burned. "The outsourcers are in the business of setting up these deals and structuring them to their advantage," an information systems director says. "The client companies don't know what they're doing. It's a matter of 'buyer beware.'"

There's a lot to beware of. Chief information officers, attorneys and consultants who have inched their way across the outsourcing minefield told of some of the more explosive issues.

1. OVERCONFIDENT OUTSOURCER

"The vendors believe they can do anything," says John K. Halvey, a partner at the law firm of Milbank, Tweed, Hadley & McCloy in New York.

Not necessarily so. "We expected that a new desktop operating system would be rolled out simply and unobtrusively," says one East Coast IS manager. "It's now 2 1/2 years into it, and we're still not there."

2. JACK-OF-ALL-TRADES, MASTER OF ...

A local systems integrator convinces you that it can also do outsourcing. Maybe not. "One company got somebody that didn't have a lot of experience," says Ian Hayes, a principal at Clarity Consulting in Marblehead, Mass. "It was a big mess. They lost a lot of money, and everybody got fired."

3. SHOTGUN CONTRACTS

The CEO says to outsource and do it today because he's already taken the anticipated savings out of your budget.

"That's where the biggest problems arise," Halvey says. "Doing the deal is your only option."

4. THE EXCLUSIVE CONTRACT

You get a discount to make the outsourcer your exclusive IS services provider.

"They may not have the low-cost or best solution, or they may lack expertise, but you're locked in," says Tom Mylott, an attorney at Gardere & Wynne LLP in Dallas.

5. VAGUE CONTRACTS

A contract calls for a "reasonable" response time. You anticipate two minutes; the outsourcer anticipates two days.

"Make sure you've got a very finite, structured idea of what you want," says Frank Schneider, CIO at apparel maker Jantzen, Inc. in Portland, Ore.

OM!

6. THE GOOD-RIDDANCE OUTSOURCE
You don't understand a new technology, so you outsource it.

Bad idea. "If you don't understand the function, you don't know how to negotiate," according to Mary C. Lacity, assistant professor of MIS at the University of Missouri and co-author of an ongoing study on outsourcing.

7. SCOPE CREEP
"I'm happy to make those changes," the outsourcer says, "but it will cost you."

That cost is usually more than the market would charge for the same services, but the client has committed to the vendor, and now it's a sole-source situation rather than competitive, French says. "The vendor will use that to his advantage."

"Everyone I've spoken to that had problems had them because they didn't negotiate something into the contract," says Robert Musacchio, vice president of information resources and CIO at the American Medical Association in Chicago.

8. PROCESS LEAKAGE
You run a leaky information technology organization. "An awful lot of work is leaking under the table," Hayes says. "Somebody calls a programmer and says, 'Will you please fix this?' They're going around the whole process, and the work never gets accounted for, so it never shows up in the outsourcing agreement."

The result is that the outsourcer easily underbids the IS budget, because it's bidding on less than what IS has actually been doing. End users get what they contracted for but less than what they're used to.

9. SERVICE LEVELS SET IN CONCRETE
The contract calls for a certain service level.

"That tends to get fixed in concrete for the life of the contract," says Katherine Holland, vice president and CIO at PECO Energy Co. in Philadelphia. "You may be signing for best practice at the time, but best practice doesn't stay the same over years."

10. THE TOO-LOW BID
"Inexperienced outsourcers underbid a contract," Hayes says. "Then the project is understaffed; they hesitate to make the [necessary] investments and they can't perform to commitment."

11. THE BULLYING VENDOR
A contract is still being negotiated, but the vendor moves some of his people on-site "in good faith" and pushes you to sign the contract and work out the details later. Bullied, you agree, and lose all leverage on important issues.

12. WET BEHIND THE EARS
An outsourcer uses junior people to save money.

"There will be people mistakes," Hayes says, "and the project won't hit service levels."

13. SEE YOU AND RAISE YOU
The contract tags prices to the Consumer Price Index.

"Mainframe computing costs have gone down 10% to 15% per year, but your costs are ramping up 3% to 4% per year," French says.

14. THE TROJAN HORSE
A consultant hired to help you evaluate a possible outsourcing has a hidden agenda.

"At every turn he was urging us that it was a good deal," a West Coast IS director says. "It became clear that the consultant's interest was that we go forward because he foresaw a follow-on engagement as we worked through the contract."

15. HOWDY PARTNER!
"We don't need a lot of detail because we're partners in this," the vendor says.

Don't believe it. "They're a partner if they share business goals, risk and return," French says. "Otherwise, it's a contract."

16. FALSE SECURITY
You sign the contract and relax — until you learn that the outsourcer let your disaster recovery lapse.

"People think they can abdicate responsibility for knowing what's going on in the areas outsourced," Holland says. "But you still have to manage it."

17. PROMISE THEM ANYTHING
Have you seen this? "As you ask questions, you notice the [outsourcer's] marketing guy nods up and down, but the operations guy tends to nod from side to side," Holland says.

If you do, watch out. "If you focus on the marketing guy, you can get caught," she adds. "He's the one *they* want negotiating the deal. You'd better have the guy who's going to be responsible for delivering the service in the room with you when you sign the contact."

18. SHACKLED TO THE CALENDAR
Two years into your 10-year data center contract, you realize client/server is the way to go.

"If I sign a 10-year contract, I can guarantee it will become obsolete," Lacity says. "The world will change."

19. SO SUE ME!
"You have to deliver tapes to a customer at 10 and not 10:01," Musacchio says. "But 10:01 may not be a big deal to the outsourcer."

You need a way to punish a vendor's performance failures without killing the vendor or committing corporate suicide, Mylott says. "You don't want a situation where you have to sue them or do nothing."

20. CULTURE CLASH
If it's hard to convince an American outsourcer that 10:00 doesn't mean 10:01, try convincing a foreigner.

"With offshore outsourcing, you get all the typical problems plus more," Hayes says. Even if they speak the same language, there can be cultural differences that adversely affect the work.

BOTTOM LINE

"The bottom line of all of this is that there are lots of issues associated with outsourcing, and lots can go wrong," says Bob Zahler, a partner at the Washington law firm of Shaw, Pittman, Potts and Trowbridge. "But if customers would think about the issues and talk to vendors about the issues and get advice from people who have been through it, they'll find that all these issues have been addressed at one time or another, and they all have solutions." □

Melymuka is a freelance writer in Duxbury, Mass.

R·E·S·P·E·C·T

MS.MIS
WOMEN IN INFORMATION SYSTEMS

Women in IS put up with subtle slights and exclusionary behavior. The best way to deal with these offenses: Take the offensive.

BY LAURA DIDIO

You've got the IS job you want, and you're good at it. You're working for a decent company. The title, money and advancement prospects are good.

But something's missing. It could be that crucial but elusive intangible: the respect of the males you work with. We're talking about a long list of slights: exclusion from meetings and strategy sessions, not being told about events, not being asked for opinions on policy, being bypassed in favor of male subordinates or being the butt of sexist jokes or behavior.

"It's a very tricky issue, and it does happen all the time," says Jo Sanders, director of the Center for Gender Equity at the University of Washington in Seattle. "There are a lot of men who are still very suspicious of women in nontraditional jobs, like IS."

The most common male reaction, women say, is "Who, me?" "We have to tread very carefully or risk accusations of hypersensitivity, rampant hormones or an overactive imagination," Sanders says.

More often than not, the respect deficit is either unspoken or the result of a passive action. Even more alarming is that women IS managers say they, too, have been conditioned to accept, and even overlook, being demeaned.

COMPUTERWORLD

For a woman in IS, disrespect in the workplace can be blatant — or subtle. Do you have an experience you'd like to share? Offer it online this week on our Web site, @Computerworld, where Laura DiDio will facilitate a forum. www.computerworld.com

Take the case of Nora Miller, a 15-year IS veteran who is manager of IS at the NW Power Planning Council in Portland, Ore. Her experience spans both the mainframe and PC LAN environments. "It happens all the time, and I don't think the men are doing it consciously," she says. "But when you add up the list, it's pretty offensive."

Miller has a male assistant named Bud. She says they've got a great relationship. But despite her 15 years at her company and the fact that she's clearly in charge, colleagues still approach Bud for answers. "I react by nicely but firmly reminding them who's in charge and that when it comes to policy they must deal with me first. Still, if I was keeping score, I'd have to say they still go to Bud more often than me," Miller says.

On another occasion, Miller's peers made a decision without informing her. When she asked why, she was told that it was decided in the bathroom. "A few days later, I happened to be passing the same guys as they were exiting the men's room in deep discussion. I stopped them and inquired whether they were talking about something that affected my IS department. Turns out they were, and they then shared it with me — but they probably wouldn't have otherwise," she says.

The lack of respect knows no borders. Dr. Eva Bozoki, chief scientist at DNS Technology, Inc. in Englewood Cliffs, N.J., began her career in Hungary. Under Communist rule all comrades were equal. "I didn't see or feel the lack of respect until I started negotiating for salaries and promotions," she says.

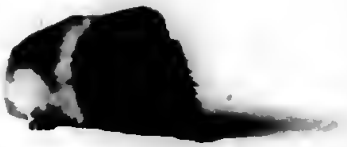
The "R" issue also crops up in the vendor community. Male salesmen can be reluctant to give women IS managers their due. Here, though, the women can hit them where it hurts — in their wallets. "I make it very clear going in to a meeting that I am the boss who has responsibility for purchasing decisions. If the vendors don't respect that and try to bypass me in favor of a male colleague or subordinate — well, there's lots of competition, so I just go elsewhere," Miller says.

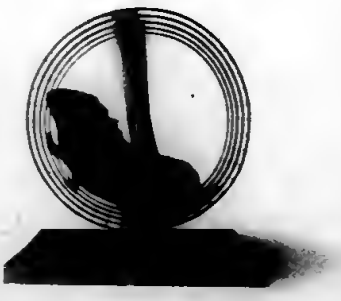
A more difficult problem is the entrenched, traditional male-bonding rituals. You know, doing business and making deals in the men's room, or during card games, golf or fishing expeditions.

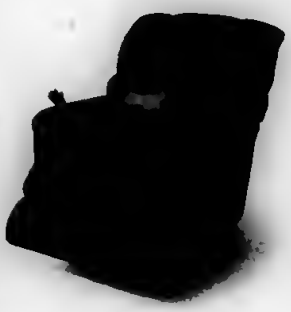
About the only way to counter this is to take the offensive and invite yourself along, Miller says. Which is what she and her colleagues did when they overheard their male counterparts organizing a Friday night pokerfest. "We butted in and said, 'Hey, we play poker.' After a minute of silent squirming, they reluctantly extended us an invitation. Funny thing, we haven't heard about any poker games since."

Sanders says the responsibility is on women to bring the respect issue to men's attention and to always take action. That's what Miller did to her first boss, who had the effrontery to always address her chest instead of her face. "He stammered and said, 'Well, they're there, and I'm a man and I didn't mean anything by it.' But he never did it again," Miller says. □

DiDio is Computerworld's senior editor, Networking.







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EXT 25

AGENT MAY NO LONGER BE SO SECRET

ROBERT L. SCHEIER

There's nothing you need less than a bunch of hype about the Next Great Thing. But every so often, we find an explosion of creativity, excitement and missionary zeal that makes us think we might be on to something significant. That's what happened to me recently at a conference on autonomous software agents.

Autonomous agents are software components with some ability to understand their environment and react to it without detailed instructions. The mail-merge function that sticks names into a form letter can be thought of as a simple agent. This conference featured grander ideas, such as agents with personalities, the ability to learn and even to evolve. (One agent, given the command to move forward on a flat surface, simply grew taller until it toppled over.)

But what really caught my eye was the interest from major IS customers and vendors. At least some of these technologists are already using agents for real-world tasks.

Be warned that "agents" is still a loosely defined buzzword. Agents also have their roots in artificial intelligence, which was too expensive and hard to use for any but niche applications. But if you doubt that agents are real, look at the agents monitoring your networks and the wizards that install your applications.

Here are examples of agents you're likely to see in commercial form over the next few years. They may not look exactly like this or come from these vendors, but check out their capabilities.

KNOWLEDGE MANAGEMENT: The agents that price-shop over the Web could also be used to "shop" for information in corporate databases.

Graduate student Marko Balabanovic (marko@cs.stanford.edu) demonstrated a system that not only answers queries about, for example, "managed health care" but keeps a running tally on how you liked the information it returned. If you give low marks to news about state regulations but high marks to news about federal regulations, the system adjusts the news mix accordingly. It also checks your rankings when other users ask for the same type of information, so they don't have to train the system from scratch. At least one start-up, San Francisco-based Imana, Inc. (www.imana.com) hopes to commercialize such technology later this year.

BETTER INTERFACES: Using a drafting program to move a chair a little bit to the left or testing how a wall would look "a little darker blue" now requires pointing, clicking, dragging, dropping and resizing. Wouldn't it be easier if a software agent could do the work, even learning what you mean by "a little darker blue?"

A team of German researchers showed a prototype of such an agent-based interface featuring a human-like figure standing in a room. The user could easily issue commands that would be cumbersome in a mouse-driven world, such as "Make all the tables green" and could even view the room through the robot's eyes. For more information, contact the Multimedia Technology Group at the Dresden University of Technology in Germany (tj4@irz.inf.tu-dresden.de).

WRAPPERS: Getting into old, patched-together systems to maintain them is one of the biggest headaches for many IS managers. Research scientist Steve Laufmann at US West Communications (laufmann@advtech.uswest.com) has proposed using agents as "wrappers" around legacy telecom systems so they can be updated to cope with deregulation. But the lack of agent standards still makes that unfeasible in multiplatform systems unless major vendors can agree on standards.

But agent-based "wrappers" already work for point-to-point solutions. Two researchers at the Oregon Graduate Institute of Science & Technology use agents to bridge a Windows-based speech and pen interface with a Unix-based battle-planning system. For more information, E-mail Prof. Phillip Cohen at pcohen@cse.ogi.edu.

CUSTOMER INTIMACY: Erin the Bartender is one of the agent-based characters being sold by Extempo Systems, Inc. in Santa Clara, Calif. (www.extempo.com). Different "characters" react in different ways to various commands. For example, if you type in too many suggestive comments, Erin jumps on the bar and orders you out.

Whether they're colorful personalities such as Erin or an anonymous network monitor, agents will live to see tomorrow — and tomorrow may come sooner than you think. □

Scheier is Computerworld's senior editor, management.

RESOURCES: POWER TOOLS

By Howard Millman

Visio Corp. revamped the standard Visio product by adding time-saving wizards and more than 1,000 new flowchart shapes and template elements, giving it more than 2,000 elements.

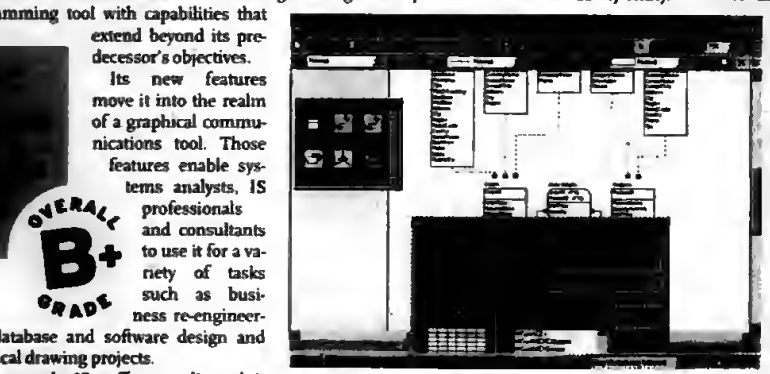
The program can convert material created in Corel Corp.'s CorelDraw or CorelFlow, Autodesk, Inc.'s AutoCAD and Micrografx, Inc.'s Designer and ABC FlowCharter. In addition, Visio capitalizes on the 32-bit architecture in Microsoft Corp.'s Windows 95 and Windows NT to add those features without compromising performance.

Other additions include support for Microsoft's Visual Basic for Applications, Open Database Connectivity and ActiveX.

Visio added a series of automated networking documentation functions. They allow a user to log on to a network, an intranet or a Web site and have the program create a hierarchical representation of the site.

One note of caution: Limit the number of hyperlinks and uniform resource locator levels that you scan. Any more than two or three levels, and your searches could take days. □

Millman operates a networking and problem-solving consultancy in Croton, N.Y. You can reach him at hmillman@mcimail.com.



Visio Professional has grown into a mature business flowcharting and diagramming tool

OVERALL GRADE B+

Visio Professional has grown into a mature business flowcharting and diagramming tool with capabilities that extend beyond its predecessor's objectives.

Its new features move it into the realm of a graphical communications tool. Those features enable systems analysts, IS professionals and consultants to use it for a variety of tasks such as business re-engineering, database and software design and technical drawing projects.

For example, IS staffers can dispatch it to automatically diagram internal networks and World Wide Web sites. Developers can use it to build flow diagrams for complex software design projects. The product's encyclopedic collection of drawing and charting functions lets users prepare flowcharts, block diagrams, layouts and schematics of any entity.

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Buyer's Guide

ENTERPRISE OFF-LINE BROWSER SAVES TIME & MONEY

By Lenny Bailes

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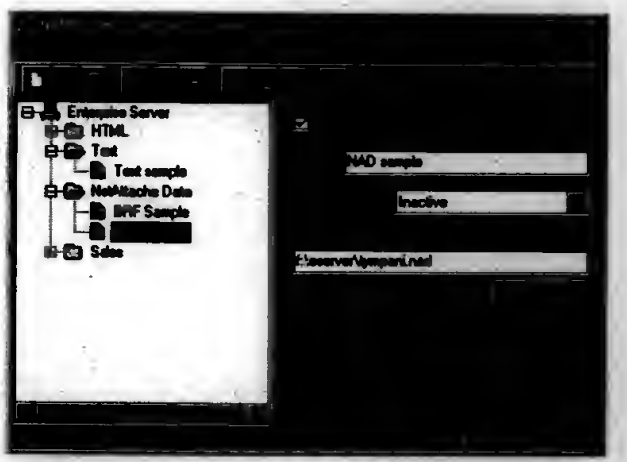
Installation	Features	Performance	Compatibility	Value
B+	B+	B	B+	B+



NetAttache Enterprise Server's strengths include ease of installation and its management features

The purpose of a corporate intranet is to provide easy employee access to information while minimizing the time and money spent on administration and file distribution.

My review of Tympani Development's NetAttache Enterprise Server found that it provides a convenient way to disseminate Hypertext Markup Language (HTML) files or other binary data across a corporate network. Working with Tympani's NetAttache Pro Web site retriever, NetAttache Enterprise Server continuously monitors the World Wide Web — a critical task for corporations whose

Enterprise off-line browser, page 90

ENTERPRISE OFF-LINE BROWSER SAVES TIME & MONEY

CONTINUED FROM PAGE 89

livelihoods depend upon browsing and analyzing large quantities of constantly changing Internet material.

Folder and document lists published through NetAttache Enterprise Server appear transparently within client Web browsers on a TCP/IP network. The Tympani package supports Netscape Communications Corp. Navigator 2.0, Microsoft Corp. Internet Explorer 3.0 and later versions of both. Network users can click and view HTML files, text documents, JPEGs and similar items directly in the Web browser. As on the Internet, more exotic document types can be downloaded to disk or displayed with plug-ins and helper applications. Administrators may mount document resources directly on the server or publish files on any network client. Remotely published resources appear alongside server-mounted files in a subscriber's Web browser. The documents available to each subscriber can be controlled by the administrator through a series of user access lists.

The real power in this becomes apparent when NetAttache Enterprise Server is combined with Tympani's NetAttache Pro Web site retrieval package. NetAttache Pro is a sophisticated Web page downloader and Web-search tool. It can automatically retrieve entire Web sites at scheduled intervals, search Web sites for specific information, retrieve only changed pages at specific times and generate linked HTML "briefs" from downloaded information, as well as HTML pages, text files and bit-map images.

NetAttache Enterprise Server runs equally well on Windows NT and Windows 95. It installs in five minutes or less, assuming that your TCP/IP network is in place. At my suggestion, Tympani added a tip to its user guide: "To insure that the network is functioning, try pinging the IP address of the machine that houses the NetAttache Enterprise Server from each of the client machines." The current shipping version (1.01) smooths out some glitches that I found in the initial version. The interface now complies more closely with the basic Microsoft guidelines for use of check boxes, pull-down lists and other things.

Once installed, NetAttache Enterprise Server should require minimal maintenance. I quickly created and published a series of folders that contained HTML pages, Microsoft Office data and Web site extracts downloaded with the NetAttache Pro client. Entering the server's IP and port address in our Web browser's uniform resource locator (URL) brought up a hierarchical tree list of available documents. Adding Inso Corp. QuickView Plus file viewers to Windows 95 let us view Excel spreadsheets and Word documents directly in a Web browser window.

NetAttache Enterprise Server supports remote administration through a client Web browser, but this feature was a bit unreliable in my tests. Server configuration parameters that I changed through the Web browser weren't always refreshed. I also encountered a screen display problem in Navigator. But I had no difficulty modifying server parameters when I used the NetAttache Enterprise Server interface directly.

Only one copy of NetAttache Pro, sold separately, is required to download material for the entire network. A competing product, Smart Delivery from First Floor Software, Inc. in Mountain View, Calif., integrates an intranet document server and a Web page retriever in one package. Smart Delivery also lets you drag and drop URLs and documents directly into published folders, a convenience that NetAttache Enterprise Server lacks. But NetAttache Enterprise Server requires no additional Microsoft or Netscape Web server software. NetAttache Pro is also a more sophisticated HTML-retriever than First Floor's Smart Server. It can download up to 100 inter- and intra-domain link levels and extract and mark differences at Web sites that are downloaded repeatedly. And NetAttache Pro is fairly good at grabbing embedded multimedia files (for example, Shockwave, JavaScript applets or QuickTime).

NetAttache Enterprise Server works well with the NetAttache Pro site retrieval tool

I found Tympani's tech support staff and programmers to be responsive in collecting bug reports and implementing fixes. Despite some remaining minor interface glitches, NetAttache Enterprise Server is a useful product that is competitively priced for its functionality. It definitely beats saving and E-mailing HTML pages manually or publishing intranet information through a Web server. □

Bailes is a writer, teacher and consultant in the San Francisco Bay Area. He is the author of The Byte Guide to Optimizing Windows 95.

By Tom Duffy

ON THE CLIENT SIDE . . .

CHEAP OFF-LINE BROWSERS FLOOD MARKET

With more than two dozen products available, there's no shortage of choices for users who want a client-based off-line browser to help gather and monitor information from the World Wide Web more efficiently. But this product group's future may be questionable, because off-line browser capabilities are being folded into other products, such as the new breed of Internet desktops due soon from Microsoft Corp. and Netscape Communications Corp.

Of the oodles of products to choose from, none has a commanding market share, according to analysts who follow the segment. "There are no outstanding leaders in this space," says John Robb, a

On the client side, page 93

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   (a) Solaris (e) Mac OS
   (b) Netware (f) Windows NT
   (c) OS/2 (g) Windows
   (d) Unix (h) NeXTstep
   App. Dev./Projects ☐ Yes ☐ No
   Networking Products ☐ Yes ☐ No
   Intranet Products ☐ Yes ☐ No
4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
   (a) ☐ Internet software
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   90. Manufacturer of Computers, Computer-Related Systems or Peripherals
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ON THE CLIENT SIDE . . . CHEAP OFF-LINE BROWSERS FLOOD MARKET

CONTINUED FROM PAGE 90

senior analyst at Forrester Research, Inc. in Cambridge, Mass. "They're all selling in the tens of thousands of units, and it's going to take a while for everything to shake out."

These low-end tools are relatively inexpensive, ranging in price up to about $50. They typically can be configured for use on the Internet and intranets, but each has a slightly different focus. Users should be careful to pick one that is well suited to the way they work, says Tim Sloane, director of Internet research at Aberdeen Group, Inc. in Boston.

The tools can be divided into two main categories and grouped broadly according to the type of user they best serve, Sloane says.

One set of tools that includes Web Retriever and Webex (see vendor list below) is aimed primarily at busy executives who want to grab and replicate Web sites or pages for later perusal, a process known as caching.

Another set, which includes Smart Bookmarks, mainly aims to notify users of changes at sites. These tools can be used to keep up with changes at a competing company's Web site, for example, or by researchers who want to keep current the data they gather from the Web. Such products can be set to cruise particular sites and list those with changes. One of the more innovative products in this group, Robb says, is Highlights2 from Tierra Communications in Ottawa. It provides a copy of the changed pages, with the changes highlighted in yellow.

Virtually all the tools, which are considered browser plug-ins, are compatible with Netscape Navigator 3.0 and Microsoft Internet Explorer 3.0 and work on Windows 95 and Windows NT 4.0. Most of the tools contain a scheduling feature that allows content to be downloaded during off-peak hours. Some, such as Web Retriever, also let users search the downloaded material by keyword.

The products shouldn't be confused with "push" publishing ventures such as PointCast, Inc.'s PointCast Network, a personalized content delivery product that delivers information to users at specified intervals. But some hybrid products exist, such as Freeloader, Inc.'s Freeloader 2.0, an off-line browser that also delivers information from a host of providers.

Although the promise of off-line browsers is sometimes grand, the reality is often disappointing, according to several analysts. "I haven't found any browsers that strike me as being particularly well-suited to any one task," Sloane says. That sentiment also was expressed by others.

Part of the problem is that the job of off-line browsers is to organize an activity that, by its nature, can be very disorganized. "If you're a real Type A person and can structure your browsing in a very rigid and predictable fashion, these products will make sense," says David Strom, an Internet analyst in Port Washington, N.Y. "Most of us are not like that. We view what we see on the Web very serendipitously."

Users also need to take care in configuring the work they want their browsers to do, Robb says. The browsers can grab an enormous amount of information in a relatively short period of time, constrained primarily by the amount of bandwidth available to download it. "I wouldn't let anyone within the company put an off-line browser on a LAN-connected machine, because you're using agent technology to go out and grab pages," Robb says. "It's quirky and processor- and network-intensive. So it can get out of hand."

The future of the off-line browser market is questionable at best. The products are constantly evolving, and their makers must scramble to add capabilities. Stand-alone programs such as indexing are beginning to be incorporated in the newest products and are likely to become standard, Sloane says.

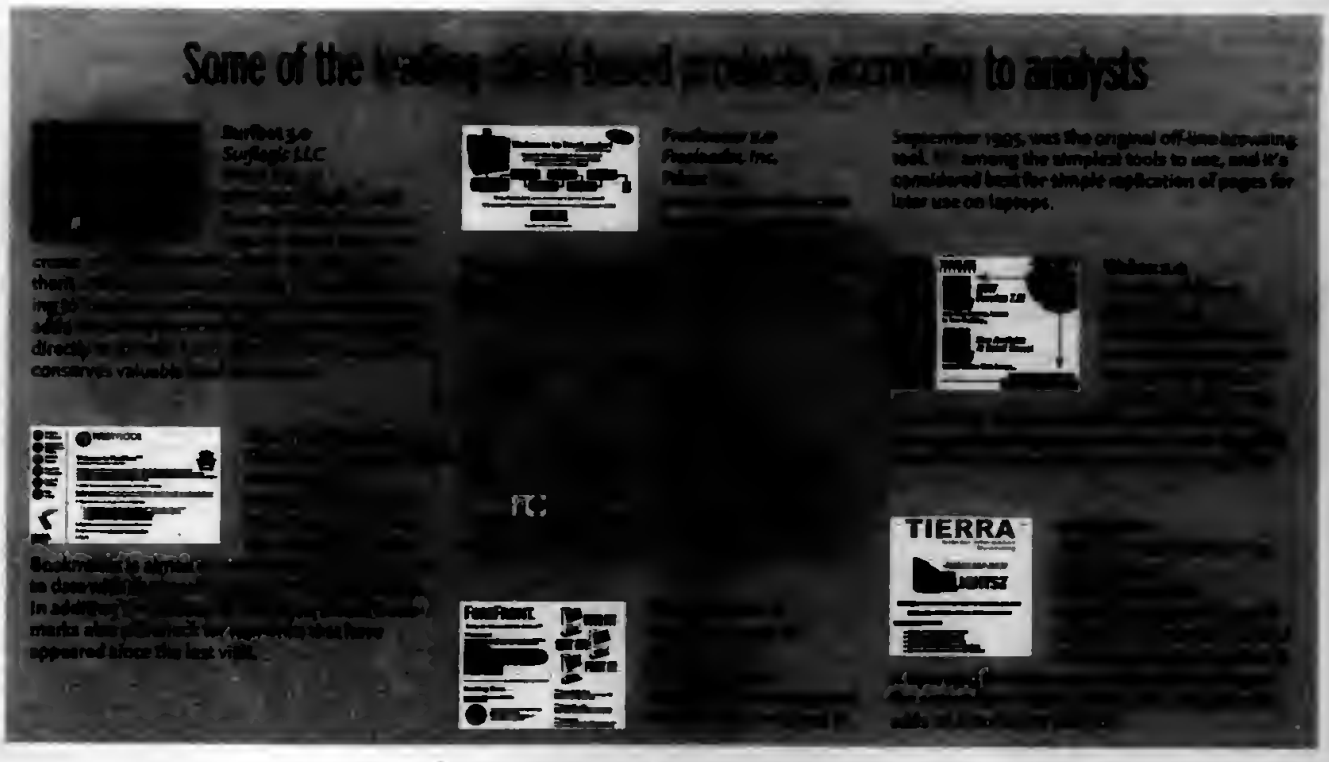
Also, Microsoft and Netscape are poised to release Internet desktop products within the next year that are likely to incorporate many of the capabilities of the off-line browsers, Robb says.

For that reason, many off-line browser vendors are working furiously to establish agreements with other companies to incorporate the off-line browser technology in their products.

First Floor Software, for example, recently signed an agreement to incorporate the technology of a related off-line browser product in sales force automation software produced by Aurum Software, Inc. in Santa Clara, Calif.

"When Microsoft and Netscape release their Internet desktops, you'll just be able to click on the page you want, and it will be replicated to your hard drive," Robb says. "They'll still have a niche in the legacy browser space. But as these new desktops come out, the [off-line browser vendors] are going to feel the pinch." □

Duffy is a freelance writer in Somerville, Mass.



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In Depth

GROW-YOUR-OWN INTRANETS

Grassroots intranet gurus can work quick (and cheap!) miracles for users. But how much leeway should IS give them?

JAMIE HOGAN

By Alice LaPlante

GAY PIERCE finally had enough.

As program administrator at Stanford University's creative writing department in Palo Alto, Calif., Pierce was used to fierce student competition for writing workshops. The 72 spots each quarter were allocated on a first-come, first-served basis, which led to the "Creative Writing Sleep-over." Students, equipped with sleeping bags, would line up outside Pierce's office the evening before registration to win a coveted spot.

It seemed like a harmless tradition, but when Pierce was shoved one semester as students fought over the sign-up sheets, she vowed, *"Never again."*

Grow-your-own intranets, page 96

GROW-YOUR-OWN INTRANETS

CONTINUED FROM PAGE 95

The department had discussed a computerized lottery, but when Pierce contacted Stanford's information systems department and made the rounds to teams of programmers working on registration, student records and other applications, "I was told it would take years, given the existing backlog, and that it would cost more than we could imagine," she says.

Then Conrad Damon rode in on his virtual white horse.

A systems software developer recently hired to support students and faculty who wanted to develop web pages for Stanford's fledgling intranet, Damon wrote an intranet-based lottery for Pierce within two weeks of hearing about her problem.

The cost to Pierce's department? Nada. Damon was so delighted at the opportunity that he volunteered his own time to complete the job.

"We were trying to get the word out about the potential of the Stanford web, so this was the perfect chance," he says. Damon had worked on similar tasks for administrative departments, but he was enthused about helping an academic department that didn't have the funds or organizational clout to command a full-scale IS project team.

Today, students who want to take a creative writing class merely complete an online web form that Damon designed. They can use any standard browser; all they need is a valid Stanford student logon. The day before registration, a random sorting program shuffles the names and spews out class lists. Students who win spots are automatically notified by electronic mail. And the bane of Pierce's life is a distant memory. "I continue to be amazed at how well this works," she says.

TOO GOOD TO BE TRUE?

IS should be equally thrilled, right? After all, grassroots applications efforts such as this take pressure off technology staffers who are already struggling with time and budget constraints.

Guess again.

IS is excited, yes. But it's also worried that this intranet thing could get out of control. "It's exactly parallel to what happened during the PC revolution," says Mike Jones, vice president of MIS at Markel Corp., a financial services firm in Glen Allen, Va. Jones says users have been quick to see the potential of intranets because applications such as Pierce's can be created so quickly and inexpensively.

"If IT says something will take two years because it's not a priority for them, then you'll see departments going ahead on their own," Jones says. "The intranet definitely raises the stakes for IT. If we can't do it as fast or as cheap as users can themselves, we've got a problem."

"I've received at least half a dozen requests from departments who want to do their own intranet applications," says Vicky Pafk, director of systems development at Talent Tree Staffing Services, a temporary staffing firm in Houston. Pafk, who says she's "stalling" these user requests, warns that as intranet tools get easier to use and more nontechnical employees gain experience with them, IS may face a major management challenge.

If you lack a policy, you'll soon be engulfed by grassroots intranet fever.

Pafk says she is happy that intranet applications can be launched with a fraction of the time and money that traditional client/server development would require. But first she wants to investigate all the issues thoroughly. "We're hoping to have an intranet policy in place by second quarter 1997," she says.

At Stanford, Damon says he keeps a low profile. "We haven't run into any trouble with the IT hierarchy," he says. But he admits his team is extremely conscious of how its intranet projects affect overall university security, network traffic and performance. "And as this grows, and more people are aware of what we're doing, we'll have to be even more careful," he says.

CRAFT A POLICY

One thing is clear: If you aren't already preparing an official policy that examines intranet issues, you'll soon be engulfed by grassroots intranet fever — which is why Pafk is so cautious.

The infrastructure is already in place at Talent Tree. Its more than 150 offices are hooked to the corporate network, and a number of internal web pages are already available to any employee who uses Netscape Communications Corp.'s Navigator. One application allows branch offices to submit descriptions of local job openings to be posted on Talent Tree's external World Wide Web site, and Pafk's staff has set up links to key suppliers, customers and other sites.

To date, all this activity is coordinated through central IS. Pafk thinks she'll probably keep it that way.

"IT tends to be held accountable for anything created by the end user," she says. So Pafk will retain oversight. "Even if I give our Los Angeles office the green light to create their own web page, it will be coordinated by IT," she says. "Yes, I'm forcing a bottleneck here. But our goal isn't to limit flexibility, but to ensure consistency and quality."

Many IS managers express concern about overburdening their already-stretched technical workers. "We simply don't have the capacity," Markel's Jones says.

Markel has pilot intranet applications under way. The human resources department uses the intranet to distribute personnel manuals. And a more strategic intranet initiative, called SourceOne, may change the way Markel does business. Previously, insurance products were sold within separate lines of business. Medical malpractice, engineering and architectural insurance, for example, were sold by specialized teams organized by industry. But because the intranet provides an easy way to coordinate data and activities, "We're finding we can cut across a number of organizational layers," Jones says.

Like Talent Tree, Markel is considering the best way to manage what Jones predicts will be massive growth of intranet-based applications. He says some sort of centralized coordination will be necessary. But how to balance responsibility for the technical aspects and content of proposed applications is undecided. "We know IT cannot do it alone," he says.

Pafk says credibility will be critical. "Sustaining a web site takes a lot of time and effort," she says. "Users might not be aware how much." At Talent Tree, the marketing department won permission to establish an internal home page. "They were real gung-ho — at first," Pafk says. "But after just three months, they lost interest." Pafk says in the future she will emphasize that "content owners" must have sufficient motivation and resources to "sustain what they start."

There's one thing IS must start doing immediately: preparing the infrastructure. Jones has already installed T1 network access to all Markel offices because "once this takes off, it really will take off," he says. "We don't want to ... oversell the service and then fail to deliver."

Despite their go-slow instincts, IS managers admit they're feeling heat to press ahead on the web front.

"This issue is getting a lot of visibility within the nontechnical management ranks," Pafk says. "I'm constantly hearing, 'Are we missing out by not being more aggressive?' "

But like Jones, Pafk says she believes a little caution now will pay off. Within a year, she says, Talent Tree will have a significant number of mission-critical applications on the intranet. Going slow will help, not hinder, users. "Right now, the development tools are still a bit primitive," Pafk says. "By waiting just a little bit, we can avoid some of the obvious pitfalls." □

LaPlante is a freelance writer in Woodside, Calif. She can be reached at alaplante@aol.com.

THE CARE AND FEEDING OF INTRANETS

Before your intranet takes root, here are some key questions to consider:

- Can the corporate network sustain the traffic? Is bandwidth adequate to ensure reasonable response times?
- Who is responsible for technical support of the site?
- Who is responsible for the accuracy and appropriateness of the site's content?
- Who is responsible for site security and for authorizing or preventing user access to confidential material?
- Does everyone who needs to use this application or information have equal-opportunity access to the corporate intranet? If everyone in your organization isn't Web-enabled, are there alternate routes to get to mission-critical functions?

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CONTRACTORS CA$H-IN

Huge project demands and staffing shortages are creating costly price tags for year 2000 contractors

DAVID FLAHERTY

BY ALAN R. EARLS

Like comedian Rodney Dangerfield, information systems professionals with older mainframe skills such as Cobol have suffered years of getting no respect. After all, the emphasis has been on "new," not "dead," skills.

But with year 2000 warnings finally being heeded, companies are scrambling to access, convert and test their massive computer code inventories. Cobol has been crowned king. Legacy pros are reaping revenge. And for contractors, revenge promises to be especially sweet.

"We see a real big upswing in demand, and compensation rates have jumped dramatically," says Steve Licata, a product sales manager at the Source EDP division of Source Services Corp., a provider of contract professionals. Licata's office is in New York, a traditional center for mainframe computing.

IS manager Bob Ferkenhoff counts himself among the fortunate. As vice president of IS at SPS Payment Systems, Inc. in Riverwoods, Ill., Ferkenhoff takes comfort that most of his company's conversion project has been completed. That's good, because Ferkenhoff predicts hard times ahead for those who still hope to hire year 2000 contract programmers.

Ferkenhoff says that at recent meetings of the Chicago Research & Planning Group, an association of Midwest chief information officers, one thing has become clear: Many of his peers haven't even begun to tackle their code conversion staffing needs. Bad move, he warns. "There simply won't be enough computer and people resources to handle this. They are already booked up," he says.

SLIM PICKINGS

They're booked, indeed. Anticipating huge need by their clients for Cobol programmers, outsourcers and consultancies got a quick start out of the gate. Most went into high gear last year to line up all the talent they could. With many corporations just now ramping up their recruiting efforts, the pickings are getting slim. Thus much of the staffing will have to be through contractors, at higher rates.

Peter de Jager, a year 2000 consultant in Brampton, Ontario, says his polling of attendees at Digital Consulting, Inc.'s year 2000 conferences shows that, on average, IS organizations expect to grow their staffs by about 10% as they work through the problem. He concludes, "We can expect either a surge of new talent entering the field via the colleges and universities, or a rapid increase in salaries."

At the University of North Texas in Denton, Associate Professor Leon A. Kappelman says, "Every week I get ... called from a year 2000 services company looking to hire my students." Unfortunately, legacy skills aren't common commodities among recent graduates, Kappelman says.

At the Canadian Imperial Bank of Commerce (CIBC) in Toronto, John Burns is bracing for the worst. As vice president for projects at CIBC, he's doing everything possible to persuade his staff not to leave and join contractors.

To bold on to the present staff, Burns says a steering committee meets monthly at CIBC to monitor the local IS labor market. A system has been mapped out to provide incentives for IS staffers to stay put through the impending crisis. "With more stories getting out about programmers making lots of money, our challenge is to manage expectations and make clear to people that CIBC is a good place to be for the long term," Burns says.

Linda Sechovicz, a business applications manager at Boston Edison Co., has seen the salary toll firsthand. The electric utility started its conversion effort last year and will probably continue to add staff into next year.

With on-site consultants, Sechovicz has already seen a doubling of quoted "per-line-of-code" rates.

"We were being told last year it would be 99 cents, and now most consultants talk about $1.95," Sechovicz says. □

Earls is a freelance writer in Franklin, Mass.

COOL CASH FOR COBOL

Demand and salaries for Cobol contractors have risen rapidly in six months

CITY OR REGION	INCREASE IN DEMAND	INCREASE IN SALARY
New England	20%	25-50%
Dallas	40%	50%
Atlanta	50%	20%
Denver	30%	30%

Source: The Registry, Inc., a staffing and consulting firm in Newton, Mass.

COMPUTERWORLD
Is an IS consulting career for you? Anne Gingras shares the pros and cons at www.computerworld.com/careers

REGIONAL SCOPE

Michigan and Ohio

Cobol resurgence and new platform technologies are driving the job markets in Detroit and Cleveland

MAINFRAMES and MAKEOVERS

By Jill Vitiello

MANUFACTURING AND MAINFRAMES still rule the Midwest industrial centers in Michigan and Ohio, but the Rust Belt is revitalizing. Each state's largest city — Detroit and Cleveland — is refurbishing its downtown and adding major-league attractions.

The Detroit Lions will build a domed football stadium next to a planned open-air baseball stadium for the Detroit Tigers.

Cleveland recently became home to the Rock & Roll Hall of Fame and Museum. The city hosted the National Basketball Association's all-star game last month, and later this year it will host Major League Baseball's all-star game.

Big steel and big iron are polishing their images.

Many Midwest companies rely on a mix of mainframe technology and client/server. Year 2000 conversion issues loom heavily for them.

Demand for experienced Cobol programmers and networking experts far outstrips supply. That has made Michigan and Ohio a job-seekers' market for information systems professionals.

Online resources for job-seekers

Check out these Web sites for information on jobs in Michigan and Ohio:

Michigan:
www.ajmps.com

Ohio:
www.ohiobiz.com

MOTOWN AND MAINFRAMES

Cars drive Detroit's economy and have a major influence on the state of Michigan. The Big Three automobile manufacturers — Chrysler Corp., Ford Motor Co. and General Motors Corp. — are enjoying steady growth. That has been a boon to area companies that supply parts to the automakers. As a result, "the market for computer professionals is hotter than I've ever seen it," says Charles Muller, a principal at AJM Professional Services in Troy, Mich.

Most opportunities in Detroit are for IS pros with two to seven years' experience in networking technologies or for programmer/analysts with a background in Microsoft Corp.'s Visual Basic, Access and C++.

Cobol programmers, who as recently as last year had a hard time finding work in Detroit, suddenly are in high demand as companies assemble teams to address year 2000 issues on legacy systems. Like firms in other major industrial centers, Michigan's companies need experts in old and new technologies.

"Java practitioners and webmasters are being snapped up," says Roger Zauel, director of manufacturing systems at Ford in Dearborn, Mich. Zauel says he wants to add dozens of IS pros to the local IS staff of about 300. "It has always been a struggle to get the top candidates because this is a very competitive area," Zauel says.

Observers in Detroit say there is a critical shortage of IS skills in nearly every discipline, including Cobol, Oracle Corp. databases, SAP AG R/3, PeopleSoft, Inc. applications, Lotus Notes, Novell, Inc. networks, Cisco Systems, Inc. routers and TCP/IP.

OHIO'S HOMEGROWN TALENT

Ohio IS managers also are feeling the squeeze of a tight job market, but many have a plan to ensure bench strength.

"Companies here do a lot of college recruiting because there are so many good schools in Ohio," says Ron Schroeder, vice president at SJK Beringer Group, Inc., a recruiting firm in Cleveland. "They've developed a system to put college graduates to work, which gives them a steady flow of young talent."

But colleges are turning out fewer graduates with IS or compatible degrees, and Cobol programming isn't being taught at many schools.

So although college graduates may have more opportunities with Ohio companies than they do in many other regions of the U.S., their numbers still aren't great enough to fill the IS demand.

After living through tough economic downturns, the region's IS departments are bouncing back only to find it difficult to hire qualified candidates. "For the first time in recent history, we're adding staff in the IS area," says David Sacco, manager of IS at Alcan Rolled Products, a division of Alcan Aluminum Corp. in Cleveland.

With a staff of 32 IS professionals serving more than 2,500 users, Alcan has relied on consultants to assist with project work. The company plans to add four midlevel positions. □

Vitiello is a freelance writer in East Brunswick, N.J.

PHOTOS: LEFT, JOHN TIERNEY, RIGHT, CHRIS LEE

TOP EMPLOYERS

Greater Cleveland's largest employers
(ranked by number of employees)

Federal government	17,402
Ford	15,500
Board of County Commissioners	10,253
Catholic Diocese of Cleveland	10,000
Cleveland Board of Education	9,673

Greater Detroit's largest employers
(ranked by number of employees)

Detroit Public Schools	18,183
City of Detroit	16,932
Chrysler	13,000
Detroit Medical Center	12,782
GM	11,250

Source: Greater Cleveland Growth Association, 1994; Crain's Detroit Business, Dec. 30, 1996

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COMPUTER SYSTEM ADMINISTRATOR. For Engr. consulting Firm, Cary, N.C. Design /plan/manage heterogeneous network of UNIX/PC systems/strategic systems planning /upgrade/ implementation. Use of HP, SGI, Sun workstations, PC's, UNIX, C, Pascal, FORTRAN, TCP/IP, Ethernet, NFS, NIS, DNS, Novell network, HP-UX, SunOS, Solaris, Ultrix, DOS Win 95 Win NT M.S. Degree in Elec. Engrng or Computer Sci & 1 yr or 1 yr related exp. in Network of UNIX Admin., LAN, networking, systems maintenance. $42,140/mon., 40 hrs/wk. Send ad/resume showing your S.S. # or Job Order # NC5760933, DOT 039-162 010 to Job Service, 742-F East Chatham St., Cary, NC 27511.

SENIOR SYSTEMS ANALYST. Responsible for project proposals, effort estimation, implementation of controlled development process. Analysis and design of applications and project scheduling for turnkey projects, coordinating multi-site development (on-site and off-shore). Must be able to travel. Two years experience in a controlled software development process environment to match with ISO9001 quality certification requirements. Bachelor of Science degree in computer science, engineering, or math-related, and two years experience in job offered required. $60,000/yr. Interested applicants apply by resume to Georgia Department of Labor, Job Order # GA 6076958, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909, or the nearest Department of Labor Field Service Office.

Senior Programmer/Analyst responsible for project management, systems analysis and complex programming necessary to complete new systems and maintain existing systems for student loans. Specifically, will undertake collection and analysis of data for student loan applications, disbursements, and repayments systems, develop functional requirements for subsystems and business functions. Will define data elements, detail screen & report formats and screen flow. Will also translate maintenance requests to functional requirements into detailed subsystem and program specifications. Will perform design, coding, compilation, unit testing, debugging & documentation of student loan application programs. Will also perform integration & system test of sub-systems and applications programs. Programs developed on VAX/VMS platform. Requirements: Education) and Experience: Either 1) B.Sc. in Computer Science and one (1) year experience in analysis & programming of student loan origination & disbursement systems OR 2) three (3) years as Programmer/Analyst, including one (1) year experience in analysis & programming of student loan origination & disbursement systems. Candidate's experience must include expertise in using DECdtams RDB, CDD (Common Data Dictionary), SQL, RMS, DCL and COBOL, expertise with hierarchical & relational databases and expertise with GUI development tools & client/server architecture. Sal $54,000/yr; M-F 8:00-5:00. Send 2 Resumes to Case #61738, P.O. Box 6968, Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in U.S. on a full-time basis.

SAP System Consultant. Duties: Configuration of the SAP R/3 modules CO, SD, EIS and CO-PA. Set up of document layout sets using SAPScript. ABAP/4 programming within SAP. Developing ABAP/4 reports. SAP interfaces to Legacy systems, and SAP on-line applications. Training of SAP applications and writing user documentations. Design and programming of Internet webpages using the language HTML. Requires: Bachelors in Computer Science and one year experience in job. 8:00 A.M. - 5:00 PM Mon - Fri. $48,000 / Year. Submit resume to Job Service of Florida, 1001 Executive Center Drive, Orlando, FL 32809-3520. Re: Job Order No: FL-1558983.

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Avatar2000

Qualified candidates FAX your resume to Avatar Solutions HR Department at (703) 821-0787.

Programmer/Analyst (2 positions available) For Wisconsin international trade software company. Duties: Program analysis, testing, installation, implementation, debugging, and documentation of export documentation software for PCs and mainframes. Installing pre- and post-installation technical support (to customers and internally), using MF COBOL and EDI translators. Debugging of interface programs providing data from host system to export documentation software. Provide evening/weekend on-call service to customers 1 week/month. Requires: Bachelor's or associate's degree in computer science or MIS, plus 2 years programming duties of job offered. As alternative to either degree, will accept 4 years of post-secondary work experience performing duties of job offered. (Reduced of 2). Salary: $40,000 - 40 hrs/wk, work 8:30 a.m. to 5:30 p.m., plus evening/weekend on-call one week per month. SEND 2 COPIES OF RESUME TO MIKE BROOKS, FILE NO. C1000080, DWE-ALC, PO BOX 7972, MADISON, WI 53707-7972. REFER TO CASE NO. C100080.

Software Consultant - Consult with client to define electronic data processing needs or problems, conduct studies and surveys to obtain data and analyze data to advise on or recommend solution, design and develop business applications using COBOL II, DB2, CICS and JCL. Required: Bachelor's in Comp Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering Electronic Engineering, Mathematics or its equivalent in education & experience & 2 years experience in the job offered or 2 years experience in related occupation as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 1 year of college education plus 5 years experience in the job offered or to a related occupation in lieu of the required education and experience. $60,000/yr., 40 hrs/wk, 8a-4p, M-F Send two copies of resume to Bartel/Brooks, JETS-ALC, P.O. Box 7972, Madison, WI 53707-7972. Reference file #C100027.

Computer Technical Consultant-Install, configure & optimize Novell Netware v4.1 servers, support servers using DS Expert, NDS and NMS, perform LAN Administration duties using Lanalyzer for Windows, LAN Workgroup & Norton Administrator M-F, 40hrs-9-5, $80,000/yr. Requirements - three year's experience in the job offered or three year's experience in the related occupation of Network Analyst. Special requirements - must have six month's work experience with: Novell Netware v4.1 servers, NDS, NMS, Lanalyzer for Windows, and LAN Workgroup; must be a Novell Certified Netware Engineer Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume & cover letter to: Illinois Department of Employment Security 401 S. State St. 3 South Chicago, IL 60605. Attn: Joan Systrom Ref. # V-IL 16173-B. No calls. An employer paid ad

New England
October 6, 1997
For information:
1-800-488-9204

Technical Support Analyst - Provide technical support for telecommunications and switching products. Test products interacting with switch using X.25, HDLC, and ISDN protocols; identify software problems on UNIX system by analyzing with Ingres database. Enhance Ingres reports using C and ESQL. Parsing tools written to C and Ingres to Informix. Develop Analog/ISDN line assignment modules. Review support methodology with quality assurance personnel. M-F, 40hrs. 8-5. $40,000/yr. Requirements - Bachelor's degree or foreign equivalent in computer science, electrical engineering, or electronics and communication engineering and one year's experience in the job offered or one year's experience in the related occupation of Support Engineer. Special requirements - must have one year's work experience with technical support for switching products; Ingres, ESQL, HDLC, & ISDN protocols. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume & cover letter to: Illinois Department of Employment Security 401 S. State St. 3 South, Chicago, IL 60605. Attn: Jack Scheller. Ref. #V-IL 16089-H. No calls. An employer paid ad

Senior Programmer/Analyst, Database: Creates, develops and modifies an Oracle relational database management system/business application using SQL coding and Dynamic Pro C to integrate C language system and program modifications with the database. Determines appropriate database enhancements, performs system architecture modifications to insure integration of such enactments and new software with existing database system. Performs systems testing and designs refined database reports and forms to insure proper functioning of database system. Requires Master's Degree in Computer Science. Also requires eleven months of experience in the job offered, or eleven months of experience as Programmer/Analyst, Database. 1 experience in related field, entire experience must include use of SQL and C to modify and develop either an Oracle or Informix Relational Database including enhancements of such systems using report and forms function. Must have proof of legal authority to work permanently in the U.S. 40 hours per week, 9:00 a.m. to 5:00 p.m. Salary $43,500 per year. Please send resume to: Arlene Lekan, Human Resources Associate GATX Terminals Corp. 500 West Monroe, Chicago, IL 60661 No calls.

Systems Analyst (Mt. Prospect, IL) Design, dvlp., program, modify & maintain comp. systems (primarily Production Control & Acct'g. Systems). Dvlp & test systems programming, dvlop. specs. & using structured analysis & design, determine capabilities & compatibility btwn new & existing programs utilizing COBOL, CICS, IMS & FOCUS on IBM mainframes & PC networks. B.Sc. in Comp Sci., CIS, MIS or Math. 1 yr prior exp in job offered or 1 yr related exp as Computer Technician Assistant. Must know Japanese & have exp. with COBOL, CICS, IMS, & FOCUS. $40,900 per yr. 40 hrs/wk. Must have proof of legal authority to work permanently in the U.S. Send Resumes to Illinois Dept. of Employment Security, 401 South State St. 3 South, Chicago, IL 60605 ATTN: Lori Bokas. Ref # V-IL 16215-B An employer Paid Ad. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

Systems Analyst (Consultant) Develop & implement operational support systems (eg. financial, mfg. & human resources) based on Oracle RDBMS & 4GL applications development tools. Analyze clients' business info. Flow reqs. using CASE. Formulate enterprise models & design & develop custom applications. Must have BSCS/EE & min 2 yrs. exp. in analysis & design of business applications using Oracle RDBMS technology in a C/Unix environment. MSCS will substitute for 1 yr. of such exp. More than 70% travel & temporary relocations to client sites thruout the USA on various intervals & at employer's expense. $34K/mo. Home office in Irving, TX. Apply at the Texas Workforce Commission, Dallas, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. JO# TX7856637. Ad paid by an Equal Opportunity Employer.

Senior Systems Analyst (Database Analyst) Designs and develops front end tools to enhance performance of a client/server based Oracle 7.1 Relational Database Management System which is installed in an HP 9000 multirange UNIX computer system. Uses front end development tool such as SCO-PUS WORKS, UNIFACE or POWERBUILDER, including use of SQL to develop user interfaces and monitor database functions for performance enhancement purposes. Designs and develops report generation of end users requirements and for database system modification accordingly, including performance of appropriate database back end coding for package, function modules and stored procedures functions of such database. Requires Master's Degree in Computer Science. Also requires ten years of experience in the job offered or two years of experience as a Systems Analyst. If experience in related field, entire experience must include the performances of all duties as specified in the job offered to be performed in either an Oracle, Informix or Sybase relational database installed in any multirange client/server computer system. Must have proof of legal authority to work permanently in the U.S. 40 hours per week, 8:30 a.m. to 5:00 p.m. Salary: $56,000 per year Please send resume to: Alice Bergmann, Director of Human Resources, US Robotics, Inc. 8100 North McCormick Blvd. Skokie, IL 60076. No calls

Sr Programmer Analyst (Colbrook, IL) to market turnkey products & manage, review & approve development of software projects; analyze client data processing requirements, analyze feasibility & economic costs associates with development of software to meet client requirements; manage resources assigned to different projects to insure projects are completed within budget & schedule; direct project manager to develop formal, detailed project plan for all active projects insuring consistency of the plan with related contract & statement of work. Reqs. Bach. in Comp Sci, Telecommunications, Computer Electrical or Electronic Engg or its equiv., 2 yrs exp in job offered or 2 yrs related exp such as General Manager Software Exports, General Manager Projects & Manager, Related exp must include software development, design & modeling of projects, software analysis, designing methodologies using software simulation methodologies Oracle, ReportWriter, Oracle CASE, Forms, Visual C++ & development of real time process control systems, SunSparc & provide technical support, $54,000/yr, 40 hrs/wk 8a-5p Must have proof of legal authority to work permanently in U.S. Send 2 resumes & cover letters (no calls) to Illinois Dept. Of Employment Security, 401 S. State St. - 3 South, Chicago, IL 60605, Attn: Lori Bokas, Ref. #V-IL16525-B "Employer Paid Ad"

Programmer/Analyst (Ft. Worth, TX) Design, dev & implementation of administrative & transportation applications IBM mainframe computer systems using NATURAL under ADABAS database with COBOL/CICS & TELON. $46,500/yr., 40 hrs./wk. Requires 2 yrs. exp. in job offered Send resume describing qualifications to Merle L'Esperance, COMSYS Technical Services, Inc., 4000 McEwen South, Ste 4200, Dallas, TX 75244

Database Analyst (Irving, TX) Full-life cycle database analyses & administration in mainframe (MVS) of ADABAS DBMS under NATURAL 4GL, employing PREDICT & CONSTRUCT tools & utilities. Database analysts & logical design modelling in ADABAS. Req'd Bachelor's in Comp. Sci., MIS or Electronic Data Processing, 2 yrs. exp. in job offered. $57,000/yr., 8-5, M-F, 40 hrs./wk. Send resume to Shelly Kelley, Sprint/United Management Co., 1300 E. Rochelle Blvd., Irving, TX 75062

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Sr. Systems Analyst - Cedar Rapids, IA - Analyze user reqs, develop & implement info. Mgment systems on IBM/MVS hardware using CICS, COBOL, DB2 & QMF. M-F, 8AM-5PM, $65,000/yr. Req. Bach. in Comp. Sci/Engineering or Math & 2 yrs exp. Employee must reside within 60 mi. of jobsite. Must have proof of authority to work in the United States. Send your resume to D.E.S. Workforce Center, 800 7th St., SE, Cedar Rapids, Iowa 52406-0729. Refer to Job Order IA 1100566. Employer paid advertisement.

SAP CLIENT SERVICES MANAGER (Project Manager) - Oakbrook Terrace, IL. Provide functional direction for project tasks utilizing knowledge of SAP (Systems Applications & Products in Data Processing) modular software. Direct SAP implementations, manage all project operations, personnel & budgets. Prepare project proposals for integration w/client's existing software & hardware including controlling, financial & materials management software. Estimate project time of completion personnel support (including systems analysts, programmers & tech staff) material & budget resources; oversee & manage SAP integration & interface operations; schedule project segments, monitor & evaluate ongoing design, installation & implementation of all SAP applications; continue monitoring & maintenance of online SAP environment & operations; develop methods of data assessment & institute client training & tech support programs. Bachelor's Degree in Comp. Science, Info Technology, Engineering, Management or Mathematics required. Must have 2.5 yrs exp. in job offered or 3.5 yrs. exp as Consultant, Analyst, Programmer or Manager. The 2.5 yrs exper must include 1.5 yrs SAP consulting, financial & materials management software. $82,100/yr, 40 hrs/wk, 8:00-5:00. Must be willing to relocate to work sites w/in the Midwest Region. Must have proof of legal authority to work in the U.S. Send 2 copies of both resume & cover ltr (No calls) to: Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605, Attn: Lori BOKSA. Reference # V-IL 16594-B. This is an employer paid ad.

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- C/C++
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Program Manager - Lead a Year 2000 project team through assessment, data conversion, and testing. Must have BS/BA in CIS, MIS, math, or equivalent experience, and at least 1 year of experience in COBOL, scheduling, and program, time, and deliverables management.

Software Analysts/Programmers - Implement computer code modifications for Year 2000 solutions. Must have BS/BA in CIS, MIS, math, or equivalent experience, as well as at least 7 years' experience in COBOL, IMS, DB2, Adabas Natural, CA-Telon, RPG, Assembler, and CICS.

Technical Solutions Analyst - Provide guidance and technical solutions for software programming issues. Must have BS/BA in CIS, MIS, math, or equivalent experience; at least 10 years' experience in COBOL, IMS, and DB2; knowledge of CA-Telon, RPG, and Assembler; and the ability to view software issues from a "big picture" perspective.

Test Analysts/Programmers - Perform software testing, identify problems, and recommend solutions. Must have BS/BA in CIS, MIS, math, or equivalent experience; at least 10 years' experience in COBOL, Easytrieve, RPG, Assembler, FORTRAN, and CICS; and software test/development experience. Software/system test experience in IV&V projects is a plus.

Software Analysts - Perform Year 2000 code modifications and recommend project improvements. Must have BS/BA in CS, MIS, CIS, or equivalent experience, as well as at least 3 years' experience with COBOL and mainframes. Proficiency in Easytrieve, Natural, CICS, SAS, FORTRAN, C, C++, Assembler, JCL, OS/2, and IMS a plus.

Test Analyst - Perform software testing, document results, and recommend solutions. Must have BS/BA in CS, MIS, system engineering, math, or CIS, as well as at least 10 years' experience in COBOL and software testing/development. Software/system test experience in IV&V projects is a plus.

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Software Analyst, Louisville KY, $38.6K/yr Dvlp Process Control s/ware for Chemical Property Analyses & Thermal Resistance syst, dvlp Clinical Trial simulation syst using SAS, prgm & test specs for the Thermal Resistance & Property Analyses systs using SYBASE/T-SQL, VISUAL BASIC, Crystal Reports & SQR, dsgn & implmnt Quality Acceptance s/ware using SYBASE, C++, ODBC & SQL*SERVER. Req MS comp sci or chem engg. Academic curriculum to incl Comp Prgmg, Chem Reaction Engg, Digital Computations, Chemical Process Calculations. Proficiency reqd w/SAS or SPSS or GPSS, & w/VISUAL BASIC or POWERBUILDER & C++ or VISUAL C++. Resume to Mary Rogers, Dept for Employment Services, 275 E. Main St 2W Frankfort, KY 40621, JO #0349891

Software Engineer. Research, design and develop computer software system for telecommunications applications; formulate and design software using scientific analysis and mathematical models to predict and measure software design; conduct software system testing procedures, programming and documentation. B.S. in Computer Science required and minimum two years in above. Two years of experience must include at least one year of professional experience working in a computer environment using UNIX, TCP/IP and Motif. Annual Salary $50,000. 40 hours per week, from 9:00a.m. to 5:00 p.m. Apply to nearest job service office or mail resume which must include your Social Security number, the job order number NC7264980 and DOT code 030.062-010, to Job Service, 700 Wade Avenue, P.O. Box 27227, Raleigh, NC 27611

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SYSTEMS ANALYST. Analyzes user requirements, procedures, and problems or automate processing or to improve existing computer system. Two years experience using Microsoft SQL Server and Power Builder. Must be able to travel. Bachelor of Science degree in computer science, engineering, or math-related, and two years experience in job offered or as programmer analyst required. $41,000/yr. Interested applicants apply by resume to Georgia Department of Labor, Job Order # GA 6077005, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

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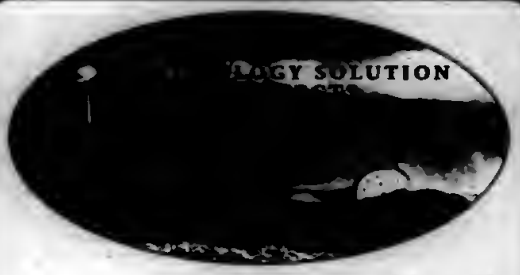

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SOFTWARE ENGINEER required. Analyze, design, develop & integrate Oracle 7, MS Access & DB2 RDBMS based client/server software using C/C++, HTML/Java & GUI building tools including Visual Basic, PowerBuilder & Oracle Designer 2000 CASE utilities. Plan & implement migration of data from MS Access & DB2 to Oracle Server. Create database entities (such as tables, views, indexes, etc.) normalize data & maintain referential integrity. Provide technical support to users. Bachelor's degree required in math, computers, or engineering plus 1 year experience in the job duties described above. Must be willing to relocate to various unanticipated work sites throughout U.S. every 4 to 10 months-Employer paid. Must have proof of legal authority to work in the U.S. Salary- $48,000/year for a 40 hour work week. Interested applicants send resume to Job Service of Florida, 2660 West Oakland Park Blvd., Fort Lauderdale, FL 33311-1347 Re. Job Order Number FL-1564186 An equal by an Equal Opportunity Employer

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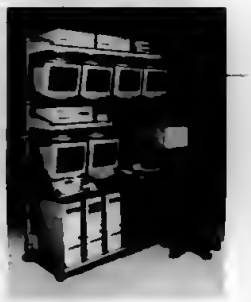

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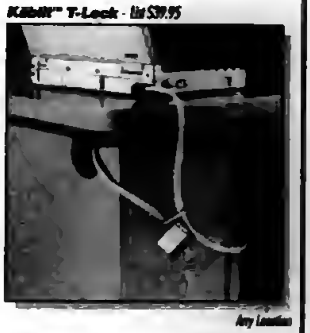

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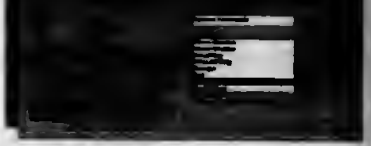

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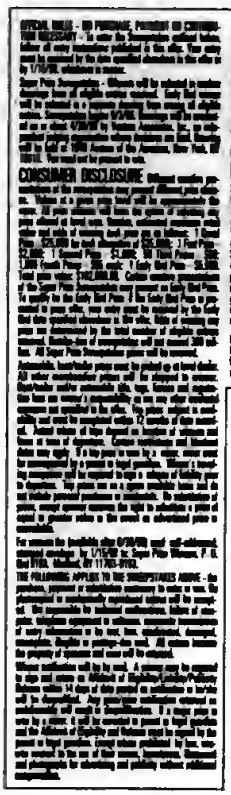

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The Week in Stocks

Gainers

PERCENT

Data Race Inc.	29.4
Advanced Micro Devices(H)	16.9
IPL Systems Inc.	15.6
Interleaf Inc.	12.5
Stratagiac Corp.	10.0
Oracle Corp.	9.5
American Mgmt. Systems(L)	8.7
Inacom Corp.	8.7

DOLLAR

Advanced Micro Devices(H)	6.75
Data Race Inc.	3.75
Oracle Corp.	3.50
Micron Technology(H)	2.38
US Robotics	2.00
Inacom Corp.	2.00
American Mgmt. Systems(L)	1.63
Micro Focus	1.25

Losers

PERCENT

Bolt Beranek	-10.0
Business Objects	-10.0
Hamilton Systems Inc.	-9.1
Lycos Inc.	-8.7
Informix Corp.	-8.3
Security Dynamics Tech.	-8.2
Silicon Graphics Inc.	-8.2
Xilinx Inc.	-8.2
Network Appliance	-8.1
Sybase Inc.	-8.1

DOLLAR

Intel Corp.	-4.38
Bell Atlantic Corp.	-3.88
Informix Corp.	-3.75
Lycos Inc.	-3.75
Security Dynamics Tech.	-3.63
Silicon Graphics Inc.	-3.63
Xilinx Inc.	-3.63
Network Appliance	-3.50
Sybase Inc.	-3.50
Hamilton Systems Inc.	-3.38

INDUSTRY ALMANAC

Profiting from disaster

Disaster recovery stocks are no disaster on Wall Street. In the past few months, shares of the leading disaster recovery vendors, SunGard Data Systems, Inc. (NASDAQ:SNDT) and Comdisco, Inc. (NYSE:CDO), have performed as solidly as their disaster recovery offerings are supposed to do.

"There is interest in the segment, and people are seeing the need for that type of service," says Mark Jordan, a vice president at A. G. Edwards & Sons, Inc. in St. Louis.

In fact, Jordan says, investor interest in Comdisco stems mainly from the Rosemont, Ill., firm's consistent earnings and the stability of its stock. The story is much the same for SunGard (see chart below).

But there is still lots of room for growth in the market. G-a Research, Inc. in Mountain View, Calif., expects revenue from disaster recovery to reach $8.1 billion by 1999. And both Comdisco and SunGard recently bought smaller competitors to gain market share.

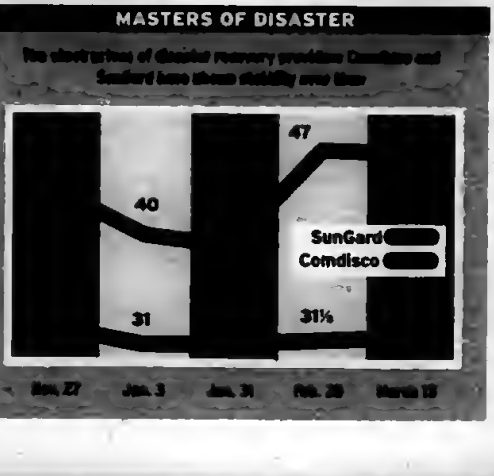
SunGard, based in Wayne, Pa., last month picked up the disaster recovery business of Englewood, Colo.-based Assurance Corp., which focuses on the credit union industry. And Comdisco spent $2 million on Exchange Resources, Inc., a Rutherford, N.J., company that backs up financial services data.

Year 2000 services will also give the market a boost.

"That's because [disaster recovery vendors] already have environments that replicate customers' prime structure so users can run their files within the disaster recovery environment," Jordan says. — Tim Ouellette

MASTERS OF DISASTER

The stock prices of disaster recovery providers Comdisco and SunGard have shown stability over time



Entry	52-Week High	52-Week Low	March 14 Price	$ Net Change	% Net Change
COMS	81.38	52.63	TCOM Corp	56.75	1.00	1.8
ATT	60.88	49.63	AMERITECH Corp	51.88	0.13	0.2
ASND	30.75	20.50	Ascend Communications	53.85	-2.35	-4.2
T	64.25	51.63	AT & T	55.50	-0.59	-2.4
BNYM	70.75	3.81	Banyan Systems Inc (L)	6.00	0.13	4.5
BAY	36.75	18.13	Bay Networks Inc	28.75	-0.25	-0.3
BEL	71.38	47.38	Bell Atlantic Corp	63.88	-3.88	-5.7
BLS	47.63	19.25	Bellsouth Corp	43.75	-2.88	-6.1
BRKT	42.25	14.00	Broadcast Technology	17.94	-0.06	-0.4
CS	43.63	26.50	Cabletron Systems	40.00	1.25	4.1
CSCC	81.25	24.50	Cascade Communications	25.88	-0.00	1.9
CGNX	34.13	9.75	Contagram Communications (L)	10.25	-0.38	-3.0
CSCO	75.75	40.50	Cisco Systems Inc.	58.13	-2.38	-4.5
CLIX	8.38	2.13	Compression Labs Inc.	2.31	-0.25	-8.5
CMNT	28.50	4.75	Computer Network Tech	7.94	0.25	4.4
XCOM	12.75	4.98	CrossCom	6.00	1.19	21.5
DIGI	20.50	13.88	DSC Communications	21.00	0.00	0.0
FORE	64.75	21.38	FORE Systems Inc (L)	22.75	-4.00	18.5
GDC	10.88	7.25	General Datacomm Indl.	8.00	0.00	0.0
GSX	44.75	34.75	General Signal Networks	41.38	-2.25	-5.2
GTE	49.88	37.75	GTE Corp	45.50	-1.38	-2.9
LU	60.63	29.75	Lucent Tech	58.50	-0.75	-1.4
MADGF	28.50	8.13	Madge Networks NV	8.75	-0.25	-2.5
MCIC	37.50	22.38	MCI Communications Corp	28.50	1.00	2.6
MNSY	34.50	8.00	Microcom Inc.	12.00	0.13	1.1
NETM	13.00	3.13	NetManage Inc.	3.06	0.00	1.0
NTRX	10.88	2.88	Netrix Corp	3.13	-0.63	16.7
NCDI	16.25	2.88	Network Computing Devices	11.75	-0.75	-8.5
NWK	32.50	11.13	Network Equipment Tech	14.38	-0.63	-3.9
NETG	28.50	10.25	Network General	23.50	0.75	3.3
NN	37.63	20.25	Newbridge Networks Corp.	30.25	-1.00	-4.0
NT	37.00	17.88	Northern Telecom Ltd.	30.75	-0.00	-4.2
NOVL	15.63	8.75	Novell Inc	9.00	-0.38	-5.9
NYN	57.38	42.88	Nynex Corp	47.88	2.38	5.2
OCTL	33.75	11.38	Octel Communications Corp	20.88	-0.75	-3.6
ODSI	27.50	11.25	Optical Data Systems Inc	18.38	-0.06	2.0
PAC	67.75	25.88	Pacific Telesis (H)	60.75	1.00	2.0
PICTL	41.25	10.25	Picturetel Corp (L)	14.63	1.50	8.3
PTON	8.00	2.88	Proteon Inc.	2.38	-0.19	-7.9
RACO	7.00	3.00	Racotek Inc.	4.00	0.00	0.0
RETX	10.00	2.38	Retix	4.81	-0.00	-2.3
SBC	58.25	28.50	SBC Communications (H)	53.13	-2.50	-4.5
SFA	20.50	12.00	Scientific Atlanta Inc.	17.50	-0.11	-0.5
SHVA	67.25	12.50	Shiva Corp (L)	13.88	1.00	7.8
SDN	48.25	34.50	Sidney Corp	42.75	-2.38	-5.5
SMSC	18.25	8.38	Standard Microsystems Corp.	8.88	0.00	0.0
USW	31.25	23.25	US West Inc.	33.38	-2.00	-5.7
USRX	105.50	28.50	US Robotics	59.00	7.00	13.5
XIRC	31.13	10.00	Xircom	15.44	1.00	14.5
XYLN	16.88	11.13	Xylan Corp	19.13	1.00	5.5
AALR	15.25	9.13	Advanced Logic Research	20.88	-0.13	-1.2
AAPL	28.88	15.13	Apple Computer Inc.	18.38	-0.13	-0.8
ASTA	8.38	2.86	AST Research Inc.	4.88	0.00	-1.3
CPQ	57.88	23.38	Compaq Computer Corp	75.75	-0.75	-1.0
DELL	20.50	14.13	Dell Computer Corp	21.38	-2.63	-8.3
GATE	28.63	24.88	Gateway 2000 Inc	59.00	-4.38	-6.7
HWP	80.00	37.75	Hewlett Packard Co. (H)	58.00	-0.13	-0.2
MUEI	25.88	8.75	Micron International Inc.	10.75	0.31	3.0
NHNY	65.00	49.88	NEC America	58.00	-0.75	-1.3
SGI	48.13	11.88	Silicon Graphics	25.13	-1.00	-11.5
SUNW	15.13	10.38	Sun Microsystems Inc	25.88	-2.91	-3.8
AMH	14.00	8.13	Amdahl Corp	20.88	-0.31	3.8
DGN	80.75	0.00	Data General Corp (H)	19.50	-1.75	-5.5
DEC	69.25	28.50	Digital Equipment Corp	29.75	-2.75	-8.5
IBM	170.13	98.13	IBM	142.25	-4.75	-3.2
MDDB	20.50	0.00	Mercury Data Inc.	4.13	0.00	0.0
NETF	6.13	0.00	NetFrame (L)	2.13	0.00	0.0
SQNT	20.13	10.13	Sequent Computer Sys.	16.63	0.81	5.1
SEQS	0.00	7.00	Sequoia Systems Inc.	2.44	0.00	0.0
SBA	35.13	10.63	Stratus Computer Inc	32.63	1.19	3.1
TDM	11.25	8.38	Tandem Computers Inc.	12.38	-0.50	-3.9
UIS	0.13	5.38	Unisys Corp	8.00	-0.38	-0.5
ADBE	45.13	23.50	Adobe Systems Inc	39.63	1.88	4.5
AMSY(H)	7.81	3.63	American Software Inc.	3.50	0.38	5.0
APLX	42.50	5.75	Applix Inc. (L)	10.00	0.00	0.0
ARSW	32.75	21.00	Arbor Software	20.38	1.63	12.1
ADSK	44.25	18.00	Autodesk Inc	34.25	-0.00	1.4
BGIS	32.50	16.88	BGS Systems Inc.	21.00	-1.50	-6.8
BMCS	31.38	25.00	BMC Software Inc.	25.31	1.81	3.5
BOOL	27.50	10.00	Bools and Barnes	23.00	-2.13	-8.9
BORL	20.13	4.75	Borland Int'l Inc	5.94	-0.06	0.0
BOBJI	50.00	8.63	Business Objects	9.94	1.19	10.7
CAYN	10.75	3.81	Cayenne Software Inc	4.19	-0.13	-2.9
CNTY	8.25	2.63	Centura Software	4.00	-0.85	12.5
CDGNF	39.50	17.63	Cognos Inc	22.88	-1.06	-4.5
CA	87.88	53.63	Computer Associates	61.00	0.00	0.0
CYN	11.25	8.13	Computervision Corp	8.75	-0.25	-2.8
CPWR	69.25	22.75	Compuware Corp	50.88	1.88	3.8
CSRE	31.00	16.75	Cognizant Inc.	16.75	-0.75	-4.3
CORFF	10.69	8.11	Corel Corp (L)	8.44	0.20	4.0
DWTI	8.25	2.63	Datawatch Technologies Inc.	4.88	0.06	1.4
FALE	62.50	18.00	Falcon Corp	18.50	-1.38	-6.8
FRTE	81.75	24.75	Fourth Software	25.25	-1.00	-10.4
FTPS	14.38	8.63	FTP Software Inc.	8.88	-0.25	-2.5
HUMCY	47.63	23.00	Hummingbird Comm. Ltd.	23.38	-0.06	-1.7
HYSW	26.38	9.75	Hyperion Software Corp	10.75	-0.25	1.3
IIIC	18.38	11.00	Information Resources	18.38	0.06	0.0
IFMX	35.13	12.38	Informix Corp (L)	17.38	1.19	7.4
INGR	18.13	7.75	Intergraph Corp	8.13	0.75	3.8
LEAF	9.44	1.31	Interleaf Inc	7.88	0.19	12.5
ISLI	18.38	7.50	Intersolv Inc	8.44	0.31	3.8
INTU	55.75	26.38	Intuit Inc	32.63	0.25	1.1
TLC	20.21	0.00	Learning Co. (The) (L)	8.75	-0.25	-4.1
LGWX	22.25	5.25	Logic Works	6.38	-0.75	-10.5
MAPS	18.50	7.50	Mapinfo Corp	8.00	-0.25	-0.7
MKTH	8.25	2.38	MarkSoft	2.88	-0.13	-8.3
MCAF	63.00	23.50	McAfee Associates	47.13	-3.50	-6.9
MENT	10.00	7.13	Mentor Graphics	8.19	-1.13	-10.9
MFGY	21.25	8.38	Micro Focus	10.25	1.00	8.8
MGNI	18.63	4.00	Micrognosis Inc	5.00	0.00	0.0
MSFT	103.00	47.93	Microsoft Corp	100.00	0.00	0.0
ORCL	51.00	26.50	Oracle Corp	30.38	1.38	3.8
PMTC	24.25	13.75	Parametric Technology	21.38	-1.00	-4.8
PARQ	14.63	1.44	ParcPlace Systems Inc (L)	1.88	-0.38	-11.5
PSFT	56.75	23.38	Peoplesoft	30.00	-2.13	-6.7
PTEC	28.50	10.38	Phoenix Technologies	10.38	-0.63	-5.7
PSQL	33.75	0.00	Platinum Software	9.44	-0.06	3.8
PLAT	18.75	8.25	Platinum Technology	11.00	1.25	2.9
PRGS	23.25	12.13	Progress Software Corp	15.88	0.00	3.8
RNBO	24.00	24.63	Rainbow Technologies Inc.	25.88	-0.44	-1.6
REDB	61.00	15.88	Red Brick Systems Inc	18.00	-4.38	19.0
SAPE	58.25	29.25	Sapient Corp	32.25	1.25	3.7
SCOC	9.13	5.50	SCO Inc.	5.88	-0.19	-3.6
SDTI	18.50	27.75	Security Dynamics Tech.	21.75	-4.38	20.2
SQAI	59.75	17.50	SQA Inc.	24.00	0.00	0.0
SOTA	19.75	20.38	State of the Art	11.00	-1.75	-6.9
SSW	57.38	27.75	Systems Software Inc	28.00	-4.38	1.3
SDRC	37.50	15.00	Struct. Dynamics Research	21.25	-1.06	-4.8
SYBS	69.00	25.00	Sybase Inc	14.81	0.16	3.9
SYNC	18.38	0.00	Symantec Corp	14.98	1.38	-8.8
SNPS	28.50	26.75	SynOpsys (L)	28.88	-1.63	-5.2
SSAX	25.00	0.00	System Software Assoc.	10.13	-0.50	1.2
SYSF	20.00	8.75	Systemsoft Corp.	10.00	-1.63	-14.0
TRUV	8.63	2.44	Truevision Corp	2.88	-0.25	-8.3
VIEW	17.50	0.00	ViewLogic Systems	14.63	0.00	0.0
VNWR	12.63	0.00	Vanstar Software Inc.	7.25	0.25	2.8
WALK	19.00	0.00	Walker Interactive Systems	12.00	-0.25	-1.8
WALL	27.50	12.25	Wall Data Inc.	17.13	0.63	3.8
WANG	26.13	13.38	Wang Laboratories Inc.	20.75	-0.69	-3.5
ADL	31.00	22.38	Advance On-Line	23.25	-0.06	0.7
IBIN	31.38	25.88	IBIN Corp	29.13	-0.75	2.8
CSRV	85.50	8.63	Computerized Corp.	10.38	0.13	1.2
EDFY	28.75	10.17	Equity Corp	20.75	-2.50	-10.9
LCOS	29.25	5.75	Lycos Inc	12.88	-4.00	-23.7
NETC	46.50	8.88	Netcom On-Line (L)	9.38	0.00	0.0
NSCP	90.25	25.50	Netscape Comm Corp (L)	27.88	-4.38	1.8
OMKT	42.25	0.88	Open Market Inc. (L)	10.25	-2.00	-19.3
PSIX	28.50	0.00	PSINet	7.00	0.00	2.7
QOEX	10.00	0.00	Quadramed Corp	3.56	-2.91	-8.1
QAPT	88.50	12.75	Qwest Systems	18.38	-0.63	-3.3
SCUR	28.25	5.63	Security Computing Corp.	8.75	-0.25	3.9
SPYG	16.88	0.07	Spyglass Inc. (L)	8.25	1.88	-10.2
YHOO	43.88	10.00	Yahoo! Inc	22.63	-8.31	75.0
AMD	47.75	20.25	Advanced Micro Devices (H)	46.63	6.75	16.9
ADI	28.25	13.75	Analog Devices Inc	21.81	0.75	3.3
CHPS	26.88	8.25	Chips and Technologies	11.38	-0.19	1.8
CRUS	29.25	17.63	Cirrus Logic	12.75	-0.63	-4.7
CY	16.88	8.13	Cypress Semiconductor Corp	10.00	-0.63	-4.8
CYRIX	28.50	11.00	Cyrix	22.63	3.88	21.2
INTC	135.00	88.00	Intel Corp	161.50	-0.00	-4.4
LSCC	54.88	28.75	Lattice Semiconductor	43.63	-6.12	12.3
LSI	39.50	17.00	LSI Logic Corp	27.13	0.67	1.3
MCRL	41.00	13.00	Micrel Semiconductor Inc. (H)	34.75	-3.00	12.6
MU	64.13	20.83	Micron Technology (H)	44.38	2.38	3.7
MOT	80.75	64.13	Motorola Inc	55.75	-4.25	-7.1
NSM	52.25	13.00	National Semiconductor (H)	29.00	1.25	4.8
TXN	87.13	48.38	Texas Instruments (H)	86.00	-0.50	-0.7
VLSI	29.25	10.88	VLSI Technology	17.19	-0.50	-2.7
XLNX	80.75	24.00	Xilinx	45.25	1.00	2.3
ZLG	40.38	14.00	Zilog Inc.	34.88	0.00	0.0
ADPT	46.88	17.50	Adaptec Inc	36.44	2.13	5.5
APCC	31.38	8.50	American Power Conversion	20.75	0.00	0.0
CBEX	7.81	1.31	Cabletron Corp	1.44	0.06	4.3
CREAF	10.19	2.38	Creative Technology Ltd.	10.25	-1.16	11.2
RACE	28.50	3.75	Data Race Inc	18.00	3.75	29.4
DTMI	13.00	4.25	Datamark Corp	8.88	-0.63	-8.0
EMC	59.88	16.50	EMC Corp.	36.88	-1.13	-3.1
EMLX	11.38	6.75	Emulex Corp	10.00	-0.38	-2.3
FSCC	28.00	10.50	Fibronics Int'l Corp	20.75	0.63	3.1
EXBT	22.75	9.38	Exabyte	16.88	-0.56	-4.4
IISLF	4.13	1.38	Intelligent Info. Systems	1.44	0.00	0.0
IOMG	28.13	0.69	Iomega Corp	14.63	-0.75	-4.9
IPLS	8.75	1.38	IPL Systems Inc.	2.81	0.31	13.0
KMAG	37.00	17.63	Komag Inc.	20.44	-4.56	14.7
MTSI	29.75	12.88	Micro Touch Systems Inc.	25.63	-0.88	-3.3
PEAK	27.38	10.06	Peak Technology Group	10.06	-0.38	-4.4
PNCL	12.88	2.88	Pronexus Biotech Inc.	7.31	0.38	5.4
AQM	9.75	3.75	QMS Inc	5.50	0.00	0.0
QNTM	46.00	10.88	Quantum Corp	27.88	-2.25	-6.5
RDUS	4.88	0.81	Radius Inc	0.00	-0.75	55.1
SEG	56.25	28.13	Seagate Technology	44.25	-3.25	6.6
STR	18.50	10.00	Storage Technology	40.75	-2.13	-4.8
STLC	0.75	0.19	Systemsoft Corp	0.00	0.00	0.0
TEK	52.25	20.88	Tektronix Inc	30.75	0.00	7.0
WDC	27.25	11.75	Western Digital Corp	16.00	-0.25	-0.4
ZIXI	63.25	23.88	4 Front Corp	51.88	0.00	0.0
AMSY	37.13	15.75	American Mgmt. Systems (L)	28.25	1.63	8.7
ANLY	40.00	18.38	Analysts Int'l.	25.00	-0.88	-3.4
AUD	45.75	25.63	Auto Data Processing	43.63	1.25	2.3
BDAM	81.50	28.25	BDM International Inc.	45.50	-2.00	-4.2
CATP	37.00	15.25	Cambridge Tech. Partners	25.25	0.75	3.1
CEN	36.00	20.38	Ceridian Corp	60.13	0.25	0.6
CDO	72.00	20.25	Comdisco Inc	31.63	0.00	0.0
CFU	68.00	18.88	CompUSA Inc	28.00	0.00	2.0
CMRZ	54.00	15.00	Computer Horizons	32.63	-0.88	-1.9
CSC	88.88	64.13	Computer Sciences	67.91	-0.13	-0.2
TSH	47.50	15.88	Computer Task Group	20.63	1.88	3.6
CDAT	28.63	12.75	Control Data Systems Inc	14.13	0.38	2.7
EGGS	13.88	4.38	Egghead Discount Software	4.63	-0.38	-5.1
EDS	65.38	28.75	Electronic Data Systems Corp	48.13	1.25	2.8
IMAC	28.63	15.38	Imagine Corp	25.00	3.50	8.7
INEL	11.50	2.81	Interlegent Electronics (L)	3.31	-0.13	-3.8
IDEA	21.88	13.75	Ideas Inc	18.88	-0.50	1.8
MICA	23.00	0.00	Micronet Inc	13.88	0.00	0.0
PAYX	43.63	27.50	Paychex	44.38	1.13	2.6
PMS	65.00	53.13	Policy Management Sys	63.13	-0.88	-0.9
REY	30.63	19.75	Reynolds and Reynolds	28.88	0.88	0.0
SCBI	60.00	14.44	SCB Computer Tech Inc	25.38	-0.50	-1.9
SERC	20.38	17.75	SEI Corp	22.00	0.75	3.3
SMED	32.13	12.25	Shared Medical Systems	51.19	-4.00	-7.3
SSPE	28.50	18.88	Software Spectrum Inc	18.00	-2.00	-9.3
SNDT	40.75	11.25	SunGard Data Systems	40.19	-2.00	-4.3
VST	29.50	0.00	VanStar Corp	0.88	-4.44	31.9

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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CORBA-COMPLIANT

The following products from the alliance are on the drawing board for re-engineering

Vendor	Product/technology
Oracle	Network computing architecture
IBM	Visual Age family of application development tools
Netscape	Open Network Environment
Sun	Internet WorkShop and Solaris products

Object stamp of approval

CONTINUED FROM PAGE 1

and adapt its Distributed Component Object Model (DCOM) to work across other platforms.

The intense rivalry from Microsoft's COM and DCOM has been a key reason for CORBA's slow acceptance in the market, analysts and users said. DCOM, which is a network offshoot of Microsoft's OLE desktop architecture, runs only under Windows. The link to CORBA and promises of multiplatform compatibility will come as a big relief to users who rely heavily on Microsoft desktops.

The average corporate IS department spends 70% of its resources — in both time and money — on its infrastructure, said Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass.

The object request broker market totaled $74 million last year and is expected to hit $817 million in 2000, according to The Standish Group.

IS managers and analysts hailed the commitments to industry standards as a possible turning point for CORBA and distributed object architectures, which are finally picking up speed.

"Having heterogeneous systems coexist defines the future," said Dave Lingren, an IS manager at Dunsgate, the IS division of The Dun & Bradstreet Corp. in New York.

Juerg Spillman, head of the Information Technology division at the Swiss Exchange, an electronic stock exchange in Zurich, said the interoperability push is welcome news.

"After a phase of decommitment of standards, it would be helpful for the IT divisions to get the focus and planning baseline back for the development and enhancement of mission-critical systems," he said.

The four-company alliance claims it will create interoperable products by finally strictly adhering to CORBA standards. These encompass a set of technologies managed by the Framingham, Mass.-based Object Management Group, a consortium of 760 companies.

The first fully compatible products are expected in April or May, said Andy Simmons, a senior product manager at Oracle in Redwood Shores, Calif.

CERTIFICATION

So far, computer vendors haven't fully complied with the standards because they have been manipulating them to grab a competitive advantage, Simmons said.

A certification program is being developed, and each company will submit all upcoming products for certification review, he said.

Users said they like the time savings possible with these products. For example, a bank with an IBM database might merge with another bank that runs an Oracle database on a different platform.

Today, that bank would need to have IS staffers who know both systems and could write programs for different platforms. If the initiatives bear fruit, the systems would work together via the standard middleware architecture, with no outside linking.

"If we were in this situation, that kind of integration would be the only viable way to solve the problem other than migrating the data out of the second database. That would be enormously expensive," said Frank Manci, technical manager at Colonial Savings F.A. in Fort Worth, Texas.

"This is really a nightmarish subject. It takes up so much resources and time. And that's not even figuring in the cost of Tums for the IS manager," Manci said. □

Future Office to offer server option

CONTINUED FROM PAGE 1

Corp., which are developing Java-based versions of their respective suites.

The advantage of Java-based applications is that they can be deployed from a server via an intranet, the Internet or a LAN to any desktop or network computer that runs a Java Virtual Machine, such as Java-based World Wide Web browsers. Users can access the Java applications regardless of their desktop operating system.

Sources close to Microsoft said the Redmond, Wash., company is hedging its bets on Java and developing a Java version of Office. But Microsoft officials continued to deny that.

NO JAVA OFFICE?

In the face of mounting Java hype, Microsoft officials said Office would support Sun Microsystems, Inc.'s Java language but a version of Office written in Java isn't likely. Matthew Price, a group product manager for Office, restated the position last week. "Any Java version of Office is just pure rumor," he said.

"Our customers do not want a subset of Office functionality," Price said. "They want us to continue with the customization we are doing. Customers don't come to us and ask us to do a specific language version of Office. It's irrelevant to them what language it's written in."

Despite Microsoft's denial, one analyst said it would make sense for Microsoft to jump on the Java suite bandwagon.

"Microsoft needs to do it because the other guys are doing it. It's insurance," said Jeffrey Tarter, editor of "Softletter," an industry newsletter in Watertown, Mass. "If lightning strikes and the [network computer] becomes incredibly successful, Microsoft has to have an answer. And they are pretty good about trying not to wait until the last minute to have an answer."

Lotus in January demonstrated its set of business applications written entirely in Java. But Corel was the first to bet big on Java with its Corel Office for Java, due this spring.

One user said the appeal of a version of Office that would run entirely off the server is the potential cost savings.

"Depending on how they license this, we might be able to have our 500 heavy suite users with Office on their desktops and then purchase concurrent licenses for the rest of the occasional users who would access it from the server," said Neil Foley, vice president of international MIS at Burger King Corp. in Miami. Burger King is moving 1,500 users to a 32-bit version of Office from Lotus' SmartSuite. "This could save us from buying 1,500 individual licenses."

Office 97 has a "run from server" option that works with Windows 95, NT and forthcoming NetPCs. But it downloads 23M bytes of files — 21M bytes are system files, 2M bytes are Office 97-specific — to the desktop, according to Price. □

BENEFITS FROM JAVA-BASED APPLICATIONS

- Run on any client machine with a Java Virtual Machine or Java-enabled browser
- Can be developed across various operating systems
- Can be accessed from intranets, the Internet or across a network
- Download only the modules needed at that time

Firms unite for worker swap

CONTINUED FROM PAGE 1

their entire career, but that hasn't been the reality for a while," Galvanek said. "The Talent Alliance will help people network for the right jobs and help companies network for the right people."

Besides AT&T, charter members — which pay an undisclosed percentage of corporate revenue as dues — include GTE Corp., Johnson & Johnson, Lucent Technologies, Inc., NCR Corp., TRW, Inc., Union Pacific Resources Group, Unisys Corp. and United Parcel Service of America, Inc. One of the unique aspects of the nonprofit alliance is a program called Lease Link, which gives members access to one another's workers.

"If GTE has workers in a particular software development area and they have downtime, and AT&T is revving up in that area, AT&T could borrow them without the workers losing time and benefits," said Peter Himler, a Talent Alliance spokesman.

To prevent staff raiding, member companies plan to develop appropriate "rules of the road" for temporarily swapping employees. But successful collaboration will depend on a high degree of trust, members said.

For employees, participation in the Talent Alliance will be voluntary. Employees will be eligible to use several online services that offer training in new technologies, job counseling and a talent/job matching service.

Beginning in mid-April, the job-matching service will be available to current and former employees of member companies at www.talentalliance.org. Employees of member companies will gain access to the site via a password.

Member companies also will research and publicize skills that workers will need to fill emerging jobs. The companies plan to codevelop and share training programs.

"Companies like ours have traditionally used job posting systems about current jobs. But it's already too late if you don't have the skills," said Dave Aker, a vice president at Unisys in Blue Bell, Pa. By collaborating on training programs, Aker said, member companies can save millions of dollars. "Many of the things we do in training and in developing people isn't proprietary, so why not share those best solutions," he said. □

MUSICAL CAREERS

In the past two years

- 47% of all workers changed industries
- 49% of all workers changed careers
- 47% of all workers returned to school

Source: Whittle Worldwide, McLean, Va.

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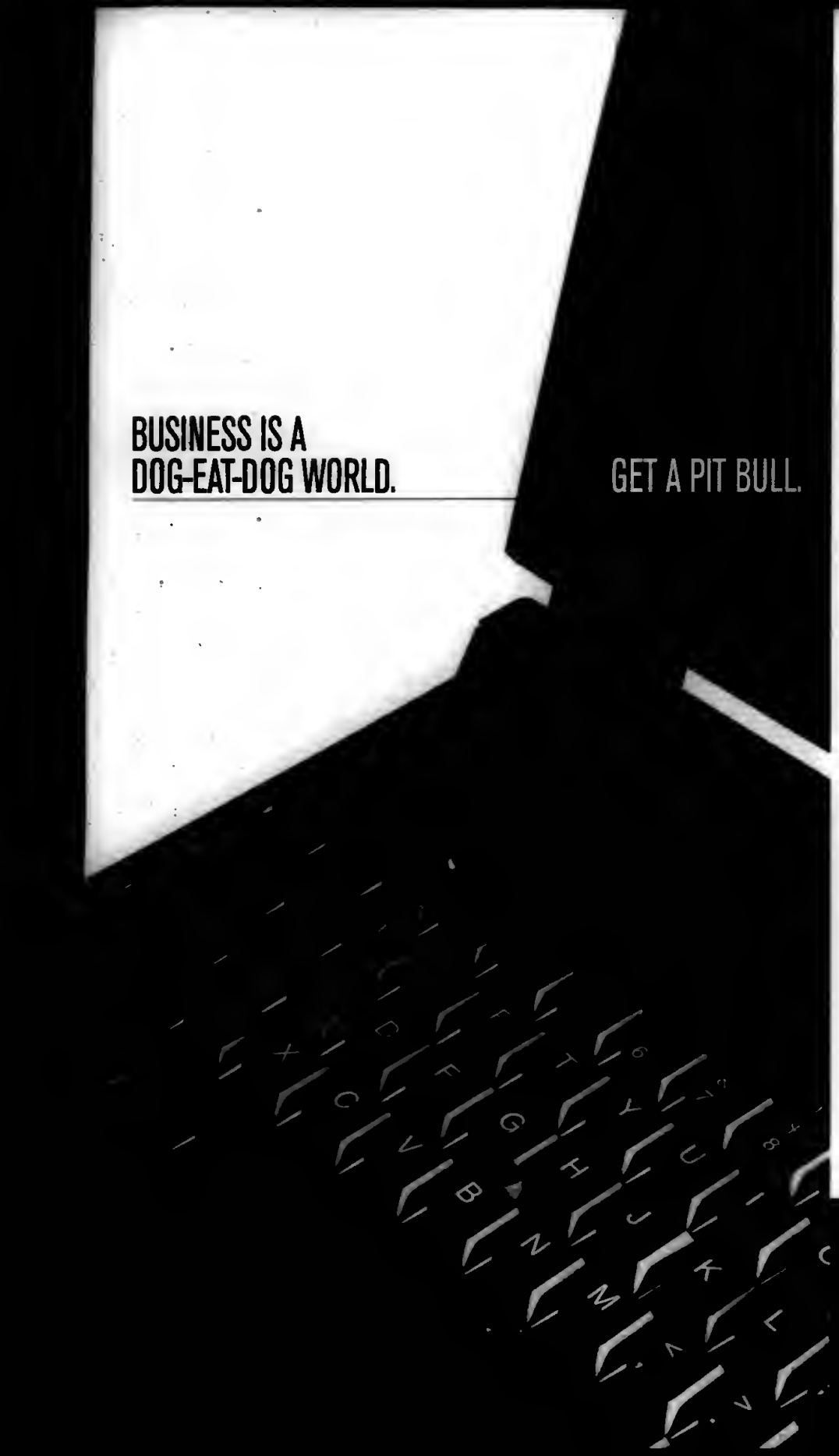

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COMMENTARY

An early look at Internet Explorer 4.0

David Coursey

Questions. First, is Internet Explorer 4.0 a radical change in software, or is it Microsoft's desperate attempt to finally get ahead of the Internet wave? Second, is it an application, a user interface or the Sir Francis Drake of cyberia? Finally, should we really care — at least for now?

I have been using a beta copy of Explorer 4.0 for several weeks. Most of what I've seen so far are cosmetic changes — such as the ability to use as a screen-saver a slide show of the World Wide Web sites I'm tracking for changes. In addition, I can now always find the browser and E-mail icons on the task bar at the bottom of my screen. Also, desktop icons light up when I roll my cursor over them.

More important, my directory windows are now browser windows. One moment I've opened the C: drive to look at the folders it contains; the next moment I've typed in a uniform resource locator and slid over to a Web site. The only thing that changed was the content of my screen. All that occurred in one browser window. And I didn't even have to type the whole address. I entered "www.cou," and the browser automatically filled in "rsey.com."

These are the superficial features. Dynamic HTML is more important but harder to assess before people start developing for it.

Dynamic HTML eliminates the need to go to a Web site over and over. Hit a page once, and you can capture its content — art, menu choices and applets. That speeds page display and makes the content usable off-line. This is my favorite new feature.

I also like Microsoft's attempt to bring the "push" world under control by providing desktop "channels" and "subscriptions" to Web-based information services. I can hope (but I won't hold my breath) that the 30 or so push vendors will find a way to integrate themselves into the Explorer 4.0 user interface rather than requiring independent clients of their own.

In some ways, Explorer 4.0 is a big advance for Microsoft users. It can be s stand-alone application or it can take control of your desktop, depending on how it's installed.

Yet all of Explorer 4.0's new features leave me wondering, in a nagging way, whether we'll ever get to use them on the sorts of small Internet and intranet sites we build.

Microsoft is good at building high-end tools for developers, but the company seems less interested in tools for people who don't consider themselves programmers. FrontPage, though it may be wildly successful, is a good example of this — it just isn't a very good program. The average business user will have an awfully hard time figuring out how to use dynamic HTML.

I like Explorer 4.0 tremendously but don't find it s compelling upgrade, despite a collection of features I really like. If these cool new features went away, at least right now, I wouldn't notice. What I want is for Microsoft — remember, this is a company that still has trouble getting information from a Web page to a user-friendly database — to concentrate on further developing the tools and features I need.

It's easy to add a "wow" factor to a piece of software. But it's far more difficult to add real and immediate benefits for end users. That's where Explorer 4.0, in its current implementation, falls short. □

Coursey, an analyst and consultant, is editor of "Coursey.com," an online newsletter available at www.coursey.com. His E-mail address is david@coursey.com.

'Do it my way, or I'll take my ball and ...'

Charles Babcock

Microsoft believes Java is a great language, and it supports it as such. It has reservations, though, about Java as an operating system. Meanwhile, Sun Microsystems thinks Java is a great language *and* a great operating system and that Java will one day replace much of Windows. The jockeying between Redmond and Mountain View is intense.

Sun periodically charges that Microsoft is undercutting Java through proprietary modifications. Some of these charges are exaggerated. Instead of restricting Java's capabilities, Microsoft is giving the huge reservoir of ActiveX controls the ability to work with Java applications the same way JavaSoft's Java Beans do. Any application that runs in Microsoft's Java virtual machine can sccess a Java Bean and activate it in the same manner as an ActiveX component. That's a bidirectional commitment on Microsoft's part, not foot-dragging, and it gives Java developers access to the well-developed field of ActiveX components.

But for its part, Microsoft makes everyone nervous with the peevish tone of its comments on Java. Microsoft must get used to the fact that there's a new, exciting development that it wasn't behind. No, not Java. The World Wide Web. Java applets and spplications do well in this new environment. If Sun can grow Java into an operating system appropriate for the Web, Microsoft must accept the idea that Windows will have competition and learn to coexist with s newcomer in that space.

Microsoft's defensiveness scarcely strengthens its hand in dealing with the wave of enthusiasm for Java and the Internet. If Microsoft wants to get some of that enthusiasm behind its Windows franchise, it needs to lead in establishing an agreed-upon set of standards for Jsva.

Java is in a state of flux. Many parties — IBM, Microsoft, JavaSoft — are writing their own Jsva virtual machines, and the specifications aren't clear. Everybody's constructing a Java compiler, but nobody's setting standards.

In other arenas, it's fine to let the marketplace sort things out. But with Java, the competitors have too much difficulty dealing with one another to sit down and talk standards. We must insist, however, that they do so. Otherwise, they will fall into willful, we'll-go-our-own-way contention.

Instead of fighting, they might appoint a bipartisan group to look at consultant Jerome Coonen's assertion that floating-point operations in Java have been optimized for SPARC/Solaris at the expense of PC architectures, which I discussed in last week's column. We know Java is portable. It would be nice to keep it platform-neutral as well.

Java also has many links to Object Management Group (OMG) members and the Common Object Request Broker Architecture (CORBA) standard. Until now, Microsoft has been standoffish toward OMG, but Hewlett-Packard has proposed a way to bridge the ActiveX and CORBA object models, and Microsoft has endorsed the proposal.

The bridge will be necessary; Java is strong in the CORBA community. There's now s CORBA-inspired protocol for objects to be linked across the Internet, the Internet InterOrb Protocol (IIOP). Netscape and Oracle have endorsed IIOP. To participate in the growing number of CORBA-based systems, ActiveX components must communicate with Java-based object request brokers.

From such tentative beginnings, let's make Microsoft and Sun deal with each other so the language that reaches us remains useful across the network. □

Babcock is Computerworld's technical editor. His Internet address is charles_babcock @cw.com.

The Back Page

alt.cw

Dispatches & Images from the fringes of the electronic frontier

At deadline: Apple lays off 25%

Apple Computer Corp. announced Friday that it will lay off 2,700 employees, with notifications going out later this month. Apple also said it will take a $155 million charge against second fiscal quarter earnings, primarily to cover the cost of reducing staff. Apple reiterated its commitment to focus on PCs and mobile computers, to deliver its Rhapsody operating system in 1998 and to continue to enhance the Mac OS. But Apple will scale back investment in future versions of Cyberdog, Open Transport, Game Sprockets and Mac OS development tools. The company will cease funding of the Video Conferencing Solution and AIX Server Software. The company also wants to slash $400 million in operating expenses with a goal toward turning a profit in the fourth quarter.

News to ponder

A civilian attorney at the U.S. Navy's fleet supply center in San Diego was reprimanded and transferred after pornographic photos, downloaded from the Internet, were found on his military PC, the Associated Press reported. The lawyer, Peter D. Butt Jr., was chief ethics officer at the center.

A new World Wide Web site (www.counseline.com) offers confidential sessions with a professional therapist, by appointment only. The online couch is best for people who have small problems and don't know where to turn for help, or for Internet addicts who are more comfortable with online contact, said owner/therapist Jeff Heer. CounseLine costs $50 for each 25-minute session.

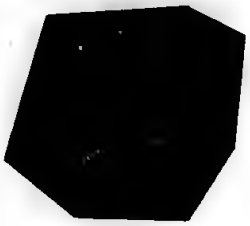
Maybe WebTV has a future after all. Popular TV talk-show host Rosie O'Donnell recently told her nationwide audience she likes the WebTV terminal made by Philips Magnavox. Remember, it was a similar comment by O'Donnell that started the recent "Tickle Me Elmo" doll craze.

An ordinary mouse may be too clunky for manipulating 3-D computer models. So Spacetec in Lowell, Mass., sells the $695 Spaceball 3003, which can zoom, pan or rotate models with just a twist or push.

SMELL-O-RAMA KIOSKS

Spraying smells into a theater to match the action on the screen didn't really catch on in the 1950s. But the concept is being revived in retail computer kiosks designed by First Wave in Scottsdale, Ariz. For example, a touch-screen kiosk could emit a perfume, the scent of leather car seats or the smell of a local restaurant's best dish. The aromatic units are built by Fracture Kiosks in Rochester, N.Y.

Myhrvold's Laws



Nathan Myhrvold, Microsoft's chief technology officer, recently posited the following (tongue-in-cheek) laws of computing:

- **Software is like a gas. It will expand to fit its container.**
- **Corollary: Software grows until limited by Moore's Law.**
- **Software will never reach industrial maturity.**
- **The software industry is now, and always will be, in a state of crisis.**

— Niall McKay, IDG News Service

Usenet forums

The following are recent Usenet newsgroup discussion threads found on the Internet. You may be able to pick up the thread by entering keywords at the search engine www.dejanews.com.

- **"The quickest, dirtiest Y2K solution"** (comp.programming)
- **"Magnetic media and magnets"** (alt.folklore.computers)
- **"Should I worry? Thanks and clunks from my Toshiba [laptop]"** (comp.sys.laptops)
- **"I program too slowly"** (comp.programming)
- **"What has artificial intelligence accomplished?"** (alt.folklore.computers)
- **"Fonts and readability"** (comp.human-factors)

Send your alt.cw contributions to **mbetts@cw.com.** If your item is used, you'll receive a cool T-shirt.

Inside Lines

Digital issues OpenVMS 'Mayday'

Forget the year 2000 issue. Digital's vast installed base of OpenVMS users first has to get past May 19, 1997. That's when an obscure limitation in the operating system will start to cause serious application errors. Apparently, some OpenVMS applications have a "delta-time limit" of 9,999 days on "system-supplied date routines," after which they start to behave erratically. Day 10,000 is May 19. Digital is sending letters to its VMS customer base and application developers that warn of the problem and point to the appropriate patches. For more information, go to www.openvms.digital.com.

Macro bug bites security gurus

It seems that not even the experts are safe. The authors of a recent computer security book — who wish to remain anonymous because they'd like to do more work for the company — sent their manuscript to their publisher in electronic form using the LaTeX word processor. But when the publisher translated the book into Microsoft Word and shipped the manuscript back for corrections, it was infected with the Concept macro virus. "We found that rather ironic," one writer said with a laugh.

Hey, it's not chopped liver

Baseline Data Systems, Inc. in Torrance, Calif., recently began shipping Info Accelerator 4.1, an address book for Windows applications. It is integrated with three top accounting packages. Such integration is possible, company officials clucked, because of Baseline's unique technology, dubbed Chicken Sandwich Technology. No one could explain why it wasn't called Tuna Fish Sandwich Technology.

Color me connected

Computer Systems Products in Plymouth, Minn., has created a line of color patch cables that eliminates the hassle of fishing through hundreds of cables to locate a specific network, telephone, fax or modem connector. The vendor says IS managers can simply locate a particular color, saving time and money. The color-coordinated cables will be introduced at Networld/Interop '97 in May.

Digital ships new Alpha chips

We hear that Digital is announcing its first low-cost Alpha 21164PC chips today. The company will release three versions running at 400, 466 and 533 MHz, and prices will start at around $280. Windows NT PCs based on the chips are expected to be announced by June. These systems are expected to cost $2,500 and up.

SAP AG's R/3 software is "complex, expensive and wildly popular." That may be stating the obvious, but it was the lead story in The Wall Street Journal *Friday. The Journal's discovery of R/3 comes nearly three years after SAP began sweeping through corporate America. Among the revelations the Journal dug up: R/3 is expensive to buy and install, and it's "just too difficult to use," or so says Larry Ellison, CEO at SAP chief rival Oracle. If you have any fresh news, contact News Editor Patricia Keefe at patricia_keefe@cw.com or (508) 820-8183.*

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Vancouver, B.C.	Apr 10	Baltimore	Apr 1	New York City	Apr 4	Reston	Apr 15
Colorado		Massachusetts		Syracuse	Apr 1	Washington	
Colorado Springs	Apr 15	Burlington	Apr 4	Tarrytown	Apr 3	Bellevue	Apr 2
Connecticut		Michigan		North Carolina		Wisconsin	
Farmington	Apr 11	Troy	Apr 3	Charlotte	Apr 11	Milwaukee	Apr 8

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